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Fortnightly Review

Formula vs. Foresight

IN the forty growing years between 1860 and 1900 the railroads of the United States increased their mileage from 30,626 miles to 198,964. This was a period of expansion, of development of the west. It was a great forty years in the history of our country.

At the beginning of this railroad expansion there was no Federal agency to which a new railroad company had to apply for a certificate of convenience and necessity. No hearings were held to determine if the public needs warranted new railroad service. The railroads went ahead on their own initiative.

And if there had been such a Federal agency, what formula could have been used to determine whether a railroad expansion to the west was in the public interest? There were no existing "trade routes" as we know them now. There were no "terminals" in the west to insure an immediate flow of traffic. There were no backlogs of postal receipts on which to estimate the amount of mail which might be carried on those railroads. There was nothing but a vast trackless area, a few outposts, boundless hopes and enthusiasm, and a potentially great land to be developed.

What sort of expansion of railroads would there have been if those early pioneering railroad companies had had to apply to a Federal agency for a certificate to launch and operate new routes leading across the unknown prairies to the great west? It is entirely conceivable that a staid body of bearded Yankees in Washington would have frowned upon the wild dreams of railroad builders

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U. S. Mfrs. Nearing Capacity; Booked Up to Next Summer

DOUGLAS TO HIRE 12,000 MEN IN '40

\$20,000,000 Payroll to Hit Record for Industry; to Use 3 Shifts Instead of Plant Expansion

Without plant additions and on the basis of orders now on hand, the Douglas Aircraft Co. Inc., of Santa Monica, Cal., expects to employ 12,000 persons in 1940 with a payroll for that year of over \$20,000,000. This estimate is not based upon additional business which may accrue as a result of legislation.

Three shifts will be employed at both the Santa Monica and El Segundo plants. A payroll of 12,000 persons is believed to represent an all-time high for aircraft manufacturing companies in the United States.

A spokesman for the Douglas company said this new peak of employment and payroll is the result of a policy of "production and development" established by Donald W. Douglas, president. No less than 12 different models are now in production, also a record for U. S. aircraft concerns. The Douglas company has spent more than \$7,

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Balances Production



Donald W. Douglas
Whose plant is now producing 12 different plane models.

DC-4 Scaled Down; United Buys 10, EAL May Take 8, American Pondering

In a surprise move which once again reshuffles the transport equipment picture, United Air Lines announced Nov. 7 the contracting for 10 Douglas DC-4 four-engine, 40-passenger transports, replacing the previous order for six 52-passenger DC-3's.

At the same time Capt. Eddie Rickenbacker, president of Eastern Air Lines, announced that his company is negotiating for eight of the revised DC-4's, and American Airlines, while emphasizing that no negotiations had been begun, was reported definitely as a possible purchaser of a number of these ships.

Thus it appeared likely that three of the four major lines would be using DC-4's while TWA is planning on being the first airline to operate four-engine equipment next summer, using the five Boeing 307 33-passenger transports now nearing completion.

The revised DC-4 opens up a much

broader market for this particular model. Instead of a gross weight of 66,500 pounds, as called for originally, the new ships will have a gross weight of 50,000 pounds. The unit price is reduced from \$500,000 to \$340,000, while there will be berths for 20 passengers and day seats for 40 instead of 38 and 52 respectively. Cruising speed is given as 220 miles per hour, about 30 to 40 mph. faster than the transports currently in use. United will use the same Pratt & Whitney engines now installed on its DC-3's, thus assuring interchangeability of parts.

The new orders are only the most recent of a long series of steps in the history of the DC-4. Originally, through the efforts of Col. Edgar S. Gorrell, president of the Air Transport Association, five airlines joined with the Douglas company in constructing the DC-4 prototype which called for four engines and 42 pas-

(Turn to page 4, col. 4)

Engines Are Key to Production; Navy to Ask for 6,000 Ships

AS the U. S. aircraft and aircraft engine industry was beginning to move into capacity production with record backlog of domestic and foreign orders in November, it became known that plans are under way to expand Naval and Army air forces far beyond present authorized limits.

Repeal of the arms embargo by Congress permitted shipment of planes built but not delivered to foreign purchasers, and completion of existing contracts to belligerents. How many more orders will be given to U. S. manufacturers was not determined immediately, but there will be no rush as anticipated in some circles for reasons that some large orders had already been placed on belief that the embargo would be lifted and because most of the major companies had all the orders they could handle.

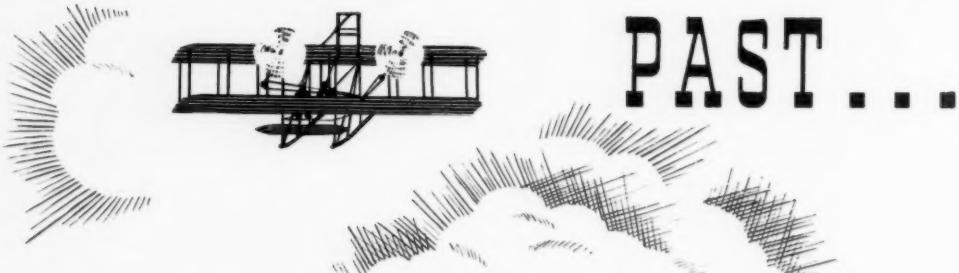
Great Britain is expected to place orders for about 1600 trainers, while France is understood to have already increased her orders for various types of ships to about 2,700 and for about 5,000 aircraft engines. The nation's two chief suppliers of aircraft engines, Pratt & Whitney and Wright Aeronautical, are booked up solid until next summer despite new factory space now under construction. No more large orders for big ships will be let by the British for some time.

Determining factor of future orders from abroad, at least as far as fighting ships are concerned, is engines, propellers and a few accessories. It's not a question now of how much will be bought, but of how much the U. S. industry can produce, and the industry is pretty well filled up. Principal orders in the next three or four months will be for smaller ships such as trainers which the British and French seem anxious to obtain.

In addition to engines and propellers, another bottle neck is in parts which have been let on sub-contracts.

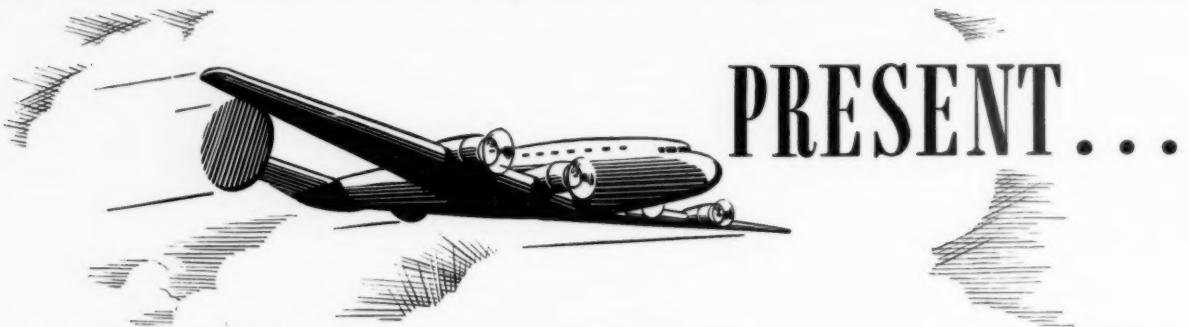
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PESCO draws upon experiences of the



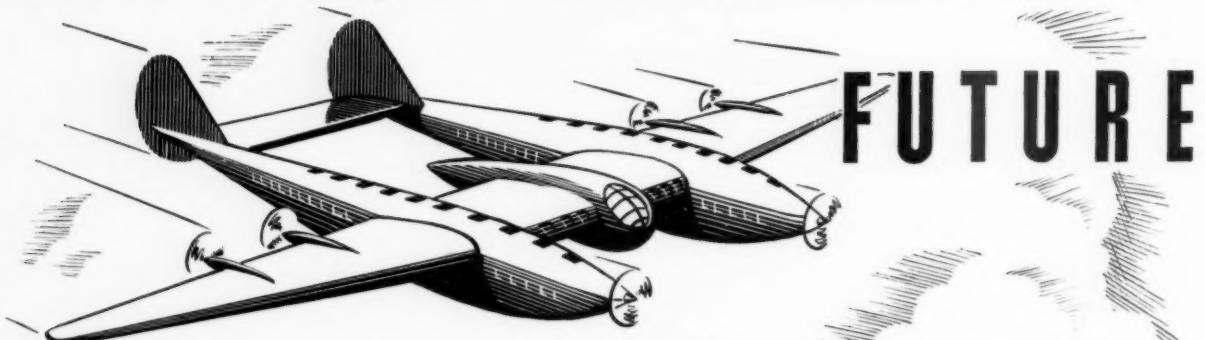
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Air Youth of America Formed to Stimulate Junior Aeronautics

Formation of Air Youth of America, a non-commercial, non-profit organization designed to stimulate interest of young people in aviation through the sport-hobby of building and flying model planes, was announced Nov. 2 by Dr. Luther Gulick, of Columbia University, temporary chairman of the organizing committee. Speaking for Winthrop Rockefeller, organizing committee chairman, Dr. Gulick indicated that more than a score of nationally known leaders in education, business, government, and aviation are members of the group's national council which is to enlist the services of technical advisers and famous aviators to bring guidance to boys and girls interested in junior aeronautics.

Dr. Gulick stressed the intent of Air Youth to work through existing groups rather than through a large organization of its own and declared that the following services are expected to be operative by Dec. 1: (1) Air Youth bulletin, monthly publication bringing news and suggestions to club leaders; (2) a series of four or five scientifically graded kits, including materials and plans, for building model planes; (3) complete specifications, but not actual materials, for constructing more advanced models; (4) an instructor's manual, for youth leaders wanting to organize and conduct work with a group formed for model plane activities; and (5) a contest handbook, showing how competitive events may be organized effectively. There will be a small charge for each of the services, the aim being to make the organization partly self-sustaining while private subscriptions supply the balance.

Other members of the organizing committee are Sanford Bates, director of Boys' Clubs of America Inc.; Col. Henry Breckinridge, attorney; Leon Fraser, president of First National Bank of New York, and Lester D. Gardner, secretary of Institute of the Aeronautical Sciences. Executive director of Air Youth, which is centered in New York City, is Ernest Gamache.

Aero Session Scheduled For A.S.M.E. Meeting in Philadelphia, Dec. 4-8

A technical session on aeronautics is scheduled for the opening day's program of the 60th annual meeting of the American Society of Mechanical Engineers to be held Dec. 4-8 at the Bellevue-Stratford Hotel, Philadelphia.

Following papers will be presented at the session:

"Mechanical Engineering in Air Mail Pick-Up Operation," by James G. Ray, All American Aviation Inc.; "Heating and Ventilating of the Modern Airplane," by Herbert Kunen, Anemostat Corp., New York; "Mechanical Aspects of North Beach Airport," by S. E. Stott, deputy director, North Beach Airport, Flushing, N. Y., and "1939 Progress Report on Aeronautics."

Subjects of interest to the aviation field also will be discussed at various other technical sessions during the conclave. One of these will be a paper on "Fatigue as a Result of High-Environmental Temperature, Physical Exercise and High Altitude," to be presented by Ross A. McFarland of Pan American Airways, San Francisco, at an opening-day session on "Work Standardization."

Calendar

Nov. 16—First Annual Fall Jamboree and Air Show, 132nd Infantry Armory, Chicago.
 Nov. 24-26—Open Contest to test Autumn Weather for Gliding and Soaring, Elmira, N. Y.
 Nov. 30-Dec. 1-2d Annual Rotating Wing Aircraft Meeting, The Franklin Institute, Philadelphia.
 Dec. 1-3—Louisiana's 2d Annual Aircraft Industries Exhibit, Municipal Airport, New Orleans.
 Dec. 4-8—American Society of Mechanical Engineers Technical Session on Aeronautics, Bellevue-Stratford Hotel, Philadelphia.
 Dec. 7-8—Kansas State Aviation Association, Annual Meeting, Wichita.
 Dec. 16—I. Ae. S. Wright Brothers Lecture, New York.
 Dec. 17—36th Anniversary of Wright Brothers Flight at Kitty Hawk.
 Dec. 27-Jan. 2—AAAS Winter Meeting, Columbus, O.
 Jan. 5-7—All-American Air Maneuvers, Miami.
 Jan. 10-12—NAA's Winter Meeting, New Orleans.
 Jan. 24-26—8th Annual Meeting, I. Ae. S.
 Apr. 26-28—Air Congress of America, Southwest Division, Tulsa.

U. S. SUES AIR RACES

Tax Lien For \$46,638 Filed Against Cleveland Corp. For Taxes on Tickets

Cleveland, Oct. 31—A U. S. tax lien for \$46,638.02 was filed in Federal Court yesterday against National Air Races of Cleveland Inc., sponsors of the annual air races, by Frank F. Gentsch, collector of internal revenue. According to the petition, the amount is owed the government in taxes on tickets to the races sold in 1938 and 1939. Interest of \$1,248.70 also is sought and a penalty of \$1,394.05 also may be assessed for failure to pay the tax, making the total judgment sought against the corporation \$49,280.77.

Petition alleges that the race management failed to pay taxes of \$24,974 in 1938 and owes \$21,664.02 in taxes on admission tickets sold to the 1939 races. Parker Hill, secretary of the races, said the corporation had always considered itself exempt "because it is a non-profit institution incorporated under the laws of Ohio."

ASME Elects Hunsaker, Condit as Vice-Presidents

Jerome Clarke Hunsaker of Cambridge, Mass., prominent aeronautical engineer and educator, has been elected a vice-president of the American Society of Mechanical Engineers and, with other new officers, will be installed during the society's 60th annual meeting to be held in Philadelphia, Dec. 4-8. Announcement of the election was made by C. E. Davies, ASME secretary.

Another new vice-president is Kenneth H. Condit who also has been active in aviation during his career.

Soviets Set Record

A new international speed record was established recently by Soviet pilots Nikolai P. Shabanov and Vladimir A. Matveyev and radio operator Nikolai A. Baikuzov, flying non-stop over a 5,068-km. (3,149 mi.) closed triangular course in 12 hr. 30 min. 56 sec. for an average 404.936 km. (251.615 mi.) per hour. Their Soviet-manufactured Stal 7-passenger plane, fitted with two 960-hp. engines, carried no payload. Previous record for this category was credited to the Frenchman Rossi, who flew a twin-engine Amio 370 plane at an average speed of 400.810 km. (249.051 mi.) per hour on June 8, 1938.

NASAO President



Douglas O. Langstaff

Newly elected president of the National Association of State Aviation Officials, has been director of aviation for Louisiana from 1934 to the present time. A graduate of Mississippi A. & M. College in 1917, Langstaff learned to fly in 1928 and was a commercial operator with Chapman-Langstaff Flying Service at New Orleans from 1928 to 1934. He is a Quiet Birdman and is 4th district vice-president of the NAA.

British Paper Lauds N. American Trainer

A hearty compliment on the North American advanced trainer, the Harvard, which Great Britain has purchased in large numbers from North American Aviation Inc., Inglewood, Cal., was paid in the Oct. 12 issue of *Flight*, the weekly aeronautical publication of London.

"That excellent advanced trainer, the North American, gives one an idea of the specialized skill required by an organist," the magazine said. "In other words, it has all the devices which are met in modern aeroplanes, and has sufficiently vigorous elevator control to demonstrate effectively the increase of stalling speed with load; a retractable undercarriage, flaps, a constant-speed air screw, an exhaust-gas analyzer and a flick stall which must be experienced to be believed."

"Withal, the most delightful of machines—one that, as a millionaire, I should like to own for use when one is feeling especially less old. If you are very bored, all you need to do is to pull the control column back sharply at almost any speed; if normally bored you have lots to play and look at."

Lynn Senses Future Orders for Barkley-Grow, Stinson

Following an extensive trip throughout the midwest, Ted Lynn, president of Aircraft Accessories Corp., Glendale, Cal., stated that "it seems to be the feeling in Detroit that both of these companies (Barkley-Grow and Stinson) will shortly be called on to produce large quantities of military aircraft.

"While most of activity in aircraft has been centered on either the Pacific or Atlantic coasts," Lynn said, "it is apparent that the midwestern companies are extremely active, and that our aircraft expansion program is by no means confined to the two coastal sections of the nation."

WHITNEY SAYS CAA BRINGS STABILITY

Gives PAA Employees Reasons for Line's Expansion, Says American Peace Essential

Praise for the Civil Aeronautics Authority and a strong belief that the United States should remain out of the European war is expressed in a statement to all Pan American Airways employees by C. V. Whitney, executive officer and chairman of the board of Pan Am. The statement appeared in the last issue of the company's house organ in connection with the five year expansion program involving \$6,000,000 in new plane equipment.

"The Civil Aeronautics Act under which the air transport business now operates, makes long range planning possible for the first time in our industry's history," Whitney said. "By issuing certificates of convenience and necessity over the established air routes of our system the United States Government gives the business of air transportation a stability which should be attractive to capital for its needed expansion. The decisions of the Civil Aeronautics Authority so far handed down indicate that they intend to carry out the spirit of the law to foster, encourage and develop civil aviation under sound business practices."

"It is obvious that world conditions are very uncertain today. But it is my strong belief that Americans should proceed with a real determination not to become involved in the present European war; that we should plan in every way to consolidate and strengthen the Western hemisphere with stronger and stronger ties of friendship and greater exchange of commerce and ideas."

"Peace is essential to our own progress and to the progress of our 20 neighboring republics. European politics are power politics and we do not want them in the Americas. Civil aviation can and must do its share. Aviation is as important to peace as it is to war. It is up to us to make the best possible use of it for peace, and we should use it to its fullest effect. In keeping aloof from Europe we must be calm as well. But that should not mean that we are going to waste time, or be caught napping. It is for these reasons that Pan American Airways is adopting this progressive program at this particular time."

'38 MACKAY AWARD

Trophy Goes to Second Bombardment Group for B-17 Flight to Buenos Aires

The Mackay Army Trophy for the year 1938 was presented by Secretary of War Harry H. Woodring to the Second Bombardment Group, Langley Field, Va., on Nov. 7.

The trophy was presented as a result of "the efficient and successful completion" of the flight of six B-17 Boeing Flying Fortresses from Langley Field to Buenos Aires, Argentina, and return during Feb. 1938.

Personnel of the flight comprised 25 officers and 24 enlisted men. Lt. Col. Robert Olds was in command.

Officials at Langley during the ceremonies included Maj. Gen. Henry H. Arnold, chief of the Air Corps, and Charles F. Horner, president of the NAA.

Coast Guard Takes Grumman

The Coast Guard has taken delivery on a Grumman JFR-2 landplane for use on missions where water landings are not necessary.

Nebraska Requiring Dual Instruction and Power Model Permits

The Nebraska Aeronautics Commission has put a regulation into effect requiring that all persons taking dual instruction apply for a student permit which is good for solo when accompanied by a medical certificate, according to I. V. Packard, secretary. Chief purpose of this regulation is to give the state commission an office record of every individual taking flight instruction, regardless of how little or how much, Packard said.

The commission also is instituting regulations requiring a permit for the flying of power models. Permits are issued to persons 16 years of age or over who may be asked to pass a simple examination on rules and regulations governing the flying of powered models, but this examination is waived if the individual belongs to a club or other organization recognized by the commission. Packard said the commission is actively furthering the educational activities of model clubs and has found that the regulation governing powered models encourages the boys to join together in groups where they can be trained and where they can receive adult supervision.

Michigan Aero Board Notes State Legislation

Aviation bills passed by the Michigan legislature during the last session have been noted by the State Board of Aeronautics. The more important of these bills are as follows:

House Enrolled Act 160 directs that there shall be a board known as the "County Airport Committee" appointed by the board of supervisors in every county in the state. To date there has not been a county agency with which the State Aeronautics Dept. could work. It is believed that when these county committees have been appointed the problem of maintenance of airports in many counties will be materially improved.

House Enrolled Act 186 in effect is a zoning law and prohibits erection of any structure over 30 ft. in height or any telephone or telegraph transmission lines, poles, etc., within 1,000 ft. of any licensed airport, landing field or seaplane harbor.

House Enrolled Act 204 authorizes the state administrative board, upon recommendation of the State Board of Aeronautics, to lease all or any portion of state owned airports and landing fields for aeronautics purposes.

Commission Members Named

Appointment of two new members to the Connecticut State Airport Commission was announced at the recent organization meeting of the commission at Groton. New members are Brig. Gen. Reginald B. DeLacour, adjutant-general, and Dr. Luther Heider, both of Stratford.

**WATCH FOR THE NEW
WACO MODEL 'E'
"Pace Setter"**

WITH CUSHIONED POWER

NAA Asks More Air Mail Funds, Big Airport Program, 10,000 Army Planes

Under leadership of Charles F. Horner, president, the National Aeronautic Association started machinery moving Oct. 26 to promote a \$5,000,000 increase in air mail appropriations and for a \$250,000,000 appropriation for airport construction and improvement. At Mr. Horner's invitation more than 80 persons, many of whom were chamber of commerce executives, met in Chicago to consider plans for expansion of civil aviation and strengthening of the national defense. The group represented numerous organizations, 50 cities and 22 states.

Five resolutions were adopted, the first calling for an additional \$5,000,000 annual air mail appropriation for purposes of extending air mail service to those cities not at present receiving air mail service, and for purposes of establishing feeder airlines. The second asked Congress for an immediate appropriation of \$250,000,000 to be used in the construction and maintenance of airports and landing fields, and the improvement of present airports, to be distributed under a federal aid program in accordance with the recommendations of the several states. The resolution calls for expenditures to be made by the Civil Aeronautics Authority.

The conference also called for "substantial expansion" over and above that already authorized in the air defense forces of the Army and Navy, the money to be expended in increased personnel, aircraft and ground facilities. "It is the belief of this conference that immediate provision should be made for

a total of not less than 10,000 planes for the Army Air Corps with provisions for an annual increase of not less than 1,000 planes over and above the necessary replacements due to obsolescence and losses; that the necessary Air Reserve and National Guard bases be established to create and maintain a reserve of not less than 30,000 pilots with the necessary facilities for training and maintaining mechanical personnel."

A fourth resolution called for additional funds for research experimentation with establishment of not less than three additional research laboratories, and a fifth resolution asked that services of the NAA be accepted as the coordinating clearing house for transmitting to Congress and Federal agencies the sentiment crystallized in states and local communities in line with the above resolutions.

Members of the resolutions committee were: Carl Hinton, Amarillo Chamber of Commerce, secretary; C. V. Burnett, manager of Detroit Airport; Ernest J. Sias, president, Lincoln Airplane & Flying School; J. B. Hartranft, Jr., Aircraft Owners and Pilots Association; William Holden, Ft. Worth Chamber of Commerce; Ben Cole of Airlines Charter Service; John C. Beukema; Floyd E. Evans, director of aviation for Michigan; Jack Vilas, Chicago; Arthur Dudley, Sacramento Chamber of Commerce; Cyril C. Thompson, United Air Lines; Al H. Near, Bowman Field, Louisville; and John Patterson, Greensboro, N. C., Chamber of Commerce.

NAA Invites Brig. Gen. W. G. Kilner To Be General Manager After Jan. 12

The National Aeronautic Association announced Nov. 10 that Brig. Gen. W. G. Kilner, assistant chief of the Army Air Corps, who retires from the Army on Nov. 30, has been invited to take office as general manager of the association at the close of the annual NAA meeting in New Orleans Jan. 10-12.

The announcement said the invitation has been extended by the executive committee and officers of the NAA. Gen. Kilner has had an outstanding administrative record with the Army and is well known in civil and commercial aviation circles as well as military.

The NAA also announced formation of a committee on reorganization to study proposals for broadening the structure of the NAA to include numerous aviation organizations, and to make recommendations to the annual meeting. C. S. "Casey" Jones, president of the Casey Jones School of Aeronautics, Newark, N. J., was named chairman.

Members of the committee are: Harry Coffey, Portland, Ore.; Maj. C. C. Moseley, Los Angeles; Gill Robb Wilson, Trenton, N. J.; W. R. Enhart, New York; Robert Aldrich, Troy, N. Y.; Arthur Dudley, Sacramento; John Ackerman, Minneapolis; C. C. Thompson, Chicago; Daisy Kirkpatrick, Boston; Jimmy Doolittle, St. Louis; Jim Webb, New York; George Logan, St. Louis; Doug Langstaff, New Orleans; Floyd Evans, Lansing, Mich.; Moss Patterson, Oklahoma City; L. P. Sharples, Philadelphia; Alex Stevenson, Schenectady, N. Y.; Al Lodwick, New York; Roger Wolfe

Kahn, New York, and B. H. Merchant, Washington, D. C.

Michigan Board Lists Fields; NYA Constructing Markers

The Michigan State Board of Aeronautics has announced that new privately owned fields have come into existence at the following locations within the last few weeks: Eaton Rapids, Charlotte, Tecumseh, Croswell, West Branch and Elk Rapids.

It also was announced that the NYA is constructing 750 cone type boundary markers for the Michigan State Aeronautics Dept. It is expected that the NYA will construct a number of wind cones for distribution to Michigan airports in the early spring.

Conn. Begins Power Line Survey

The Connecticut State Public Utilities Commission has begun a detailed survey of all Connecticut airports to determine whether nearby power lines constitute a hazard to aircraft. "When the survey is completed," declared Chairman Joseph Alsop, "we will try to work out some formula that will be satisfactory to the state aviation commissioner, power companies and other interests involved."

Turner School for Indianapolis

According to news from Indianapolis, Roscoe Turner will open a flying school there within a short time. Turner was considering Indianapolis, Dayton and several other cities. A two-year lease on a tract adjoining Municipal Airport was given Turner, it was said, and a hangar costing about \$150,000 will be constructed.

DC-4

(Continued from page 1)

senger seats. The lines were United, American, TWA, Eastern and Pan American. After the agreement was reached and construction begun, TWA ordered six Boeing 307's which were to have a gross weight under the minimum called for in the cooperative agreement. TWA's ships were to have been in operation last year but various technical and legal difficulties have delayed completion.

When the DC-4 finally made its bow, all of the lines except United had cooled in their ardor for such a large ship. Only United had the ship and flew it east on an inspection tour. When the deadline came around for orders from the five lines, only United announced a purchase. After several months of conversations among the airlines and the Douglas company, the DC-4 was scaled down in size and has become, as a consequence, a more desirable plane from standpoint of payload and traffic. The new ships are scheduled for delivery in the spring of 1941.

Eastern Buying 3 More Transports at \$116,666 Each

Because of "unprecedented passenger traffic," Eastern Air Lines' board of directors on Oct. 28 approved purchase of three more Douglas DC-3s for quickest delivery, Capt. E. V. Rickenbacker, president and general manager, announced.

Purchase calls for an expenditure of nearly \$350,000. The order followed the Sept. 18 announcement by Capt. Rickenbacker of the purchase of three Douglas sleeper transports at \$122,000 each. The sleepers will be placed in service on the New York-Brownsville flight.

The two equipment orders placed by EAL with Douglas Aircraft Co. Inc. involve an expenditure of approximately \$716,000.

PCA's Capital Fleet To Operate Dec. 15

The new Capital Fleet of Pennsylvania-Central Airlines, composed of Douglas DC-3s, will be placed in service on the Detroit-Norfolk route about Dec. 15, J. J. O'Donovan, PCA vice-president-traffic, has announced. Six of the planes were to be delivered this month, four more in March.

The new fleet has been styled by Harry S. Pack, Jr. of Grosse Pointe, Mich., industrial designer. A general color scheme of rust and gray has been used both on interior and exterior of the transports. Air hostess uniforms, loading ramps, company insignias and signs have been styled by Pack to increase eye appeal and to coordinate the color scheme.

For several weeks, Capt. J. H. Carmichael, PCA operations manager, and his two divisional chief pilots, C. W. Weiblein and Murl Estes, were at Kansas City to observe general Douglas operations practices and procedures followed by TWA.

MCA Buys Used Lockheed

Mid-Continent Airlines on Sept. 31 acquired a used Lockheed 10A from Westchester Airplane Sales Co. for \$30,409.45. With a residual value of \$1,000, the ship will be depreciated over three years. Westchester company bought the plane in Feb. 1937.



IT PAYS TO FLY

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Embargo Repeal to Benefit Industry Constructively, Col. Jouett Says

Efficient Production, Steady Export Flow and Recouping of Lost Markets Are Cited; Chamber Head Doubts Exaggerated Profits

In response to inquiries by AMERICAN AVIATION, Col. John H. Jouett, president of the Aeronautical Chamber of Commerce of America, made the following comments on the repeal of the arms embargo:

"Lifting the embargo affects the industry in three different ways:

"First, by permitting our industry to sell to all nations regardless of whether or not they have gone to war, the repeal measure serves to restore confidence in our export markets. The industry has lost a great deal of business in the past because foreigners who wanted to buy our equipment feared that they would not be able to procure replacements in case of an emergency.

"Second, the repeal leaves the industry free to accept new orders from belligerents and at the same time accept new business from those nations which are at peace, with the assurance that they can make deliveries. This should have a very constructive influence on the growth of our trade with South America, because Latin American nations can now buy both commercial and military equipment from us with every assurance that they can invest time and money in training and operating with American aircraft, without danger of an embargo suddenly shutting off their supplies and forcing them to start over again on strange equipment from other countries.

"Third, the sale of American aircraft abroad enables the aviation industry to go from small orders into straight-line production. This in turn will educate labor, create reliable sources of supply and result in more efficient management so that any emergency demands by the American military services can be more easily met.

"The embargo repeal is constructive because we will be able to run a full force at 100 per cent efficiency on one shift, whereas now when a manufacturer has a very large backlog, he is forced to use three shifts, the second and third shifts being considerably less efficient than the first. It is, therefore, economical to expand manufacturing area.

"As to the question of profits, there is no evidence that the industry will make exaggerated profits on foreign orders. While some orders might be more profitable than others, the average should be conservative.

"Foreign orders for aircraft benefit more than 50 allied industries, because the money received by the airplane equipment people filters down to those industries supplying both raw and fabricated materials. One of the by-products which can result from foreign business is greater demand abroad for American machinery and other fabricated goods used in servicing, repairs, training, airport and other operations equipment. Incidentally, about 44 cents out of every revenue dollar in the airplane industry goes into the payrolls of shop employees.

"During this period of high production our aircraft manufacturers invariably are looking to the future in the hope that private flying will receive a great stimulus. Aviators trained for an emergency are the potential customers for aviation equipment in times of peace. A public made more familiar with flying during

times of emergency is more ready to accept flying in normal times.

"I believe the ultimate goal of our industry is to develop its commercial markets until they predominate.

"As to the possible shortage of professional and skilled labor, we see no possibility of it at the present time. It should be pointed out that the industry employed 13,000 wage-earners in 1934 and at present it is estimated that there are 50,000 employed in our shops. This increase in shop employees was accomplished without any hold-up in production."

27th Squadron Reconstituted

The first tactical squadron of the Army Air Corps to be reconstituted and completely equipped will be the 27th Reconnaissance Squadron, the War Dept. announced on Nov. 1. This squadron has been in the process of organization and training at Langley Field, Va., for over a month and is under the command of Maj. Delmar H. Dunton, Air Corps. Squadron consists of 28 officers and 228 enlisted men and is scheduled for duty in Puerto Rico. Movement to Puerto Rico will be made by ferrying of the planes and by water transport for the personnel not accompanying the planes.

Embargo Repeal Can Bring Lower Cost, Better Designs, More Safety—Hardin

Large foreign orders for aircraft, engines and accessories placed in this country following lifting of the embargo should save the domestic airline industry millions of dollars through decreased manufacturing costs per unit, according to Thomas O. Hardin, chairman of the Air Safety Board of the CAA, when asked by AMERICAN AVIATION for comments on the repeal of the embargo.

"I believe the repeal of the arms embargo was a sound and logical move on the part of the President and of the Congress, and that it will have a highly beneficial effect on the welfare of this country both economically and otherwise," he said. "I feel that this is particularly true with respect to the aeronautical industry.

"Large orders by foreign governments for aircraft, engines and accessory equipment, added to our domestic requirements for both military and commercial equipment, will provide American manufacturers with the first opportunity they have ever had to go into quantity production.

"I think it is reasonable to assume that this will result in more efficient manufacturing methods and ultimately in a substantial reduction in the unit price to the airline operator and the private owner as well. The increase in production facilities and decrease in unit cost could easily mean the saving of millions of dollars in capital investment to domestic and foreign operators of the United States and at the same time materially improve our position from the standpoint of national defense.

"Another benefit which should accrue to the aeronautical industry through the repeal of the arms embargo, and one of great importance is that it will give a strong impetus to experimentation, which will un-

Army-Navy Aircraft Procurement 1920-1940

The following figures appeared in connection with the neutrality debate in Congress. All data are from official War and Navy Department sources, and illustrate the increasing expenditures for aircraft during the years since 1920 and the estimates for the Navy for the years up through 1940.

Navy (Exclusive of Ordnance for Aircraft)	Army Appropriations for New Aircraft	Office of Chief of Naval Operations, Nov. 2, 1939.
1920 \$4,616,000	1920 \$3,487,384	
1921 4,531,000	1921 7,442,191	
1922 5,380,000	1922 5,328,377	
1923 6,167,000	1923 3,007,839	
1924 5,853,000	1924 2,997,350	
1925 4,923,000	1925 4,625,404	
1926 8,235,000	1926 4,400,000	
1927 12,340,000	1927 6,754,000	
1928 8,554,000	1928 9,492,550	
1929 18,480,000	1929 11,837,445	
1930 14,245,000	1930 18,439,280	
1931 12,199,000	1931 17,573,723	
1932 8,715,000	1932 15,296,231	
1933 7,208,000	1933 11,525,728	
1934 12,273,000	1934 8,257,807	
1935 20,691,000	1935 10,295,579	
1936 26,561,000	1936 22,999,233	
1937 20,963,000	1937 33,371,248	
1938 27,265,000	1938 34,054,311	
1939 24,238,000	1939 32,185,903	
1940 (Estim) 75,494,000	1940 149,305,750	War Department, Finance Division, Oct. 25, 1939.

The Office of the Chief of Naval Operations states that the following expenditures for aircraft (exclusive of ordnance for aircraft) have been estimated:

1941 68,148,000	1943 70,819,000
1942 71,545,000	1944 65,248,000

CAA Buys Seabird

A Seabird, manufactured by Fleetwings Inc., Bristol, Pa., has been purchased by the CAA for use by the government's inspector in Alaska in his work in connection with expansion of Alaskan airways. The Seabird is powered by a Jacobs L5MB of 300 hp.

pany, \$80,000,000, while Glenn L. Martin Company was credited with \$66,000,000. Both include recent French orders.

Curtiss-Wright and United Aircraft both had about \$50,000,000 each, although these will be increased if indeed they are not already above that figure. Lockheed has about \$30,000,000, and Aviation Corp. \$27,000,000. North American Aviation is about \$27,000,000 and expected to be higher shortly.

But foreign orders were not all that was in prospect for the industry, for plans are underway in Washington to secure greatly increased appropriations next session of Congress. Whatever production capacity is left unfilled by foreign orders will be taken up by next summer with domestic purchases for the Army and Navy.

Plans for increasing the authorization for Navy planes to 6,000 were announced by Rep. Carl Vinson, chairman of the Naval Affairs Committee. There is no top limit on Naval plane authorization except that the number is not to be "less than 3,000 planes." But the Navy has only 1,500 operating planes now with 800 in reserve and for miscellaneous purposes. Observers confidently predict that the Navy will have plenty of money for new aircraft when Congress meets in January. Vinson's program will call for a 3-year expansion to reach the 6,000 figure.

Likewise the Air Corps will receive large supplementary appropriations if present plans prevail. Both the Navy and Army regular budgets will not be increased by more than a hundred million or so, but supplementary funds will be asked in each case.

It is estimated that Naval expenditures for aircraft will reach \$75,000,000 for the current year ending June 30, 1940. Army expenditures for aircraft for the same period will reach a record high of \$149,305,000.

The Navy, however, has planned well into the future. As the accompanying table shows, the Navy estimates its aircraft expenditures for the next four years at above \$65,000,000 per year, whereas until this year such expenditures never exceeded \$27,000,000.

The combination of foreign and domestic orders are expected to keep the U. S. industry up to capacity for an indefinite period.

Mfrs.

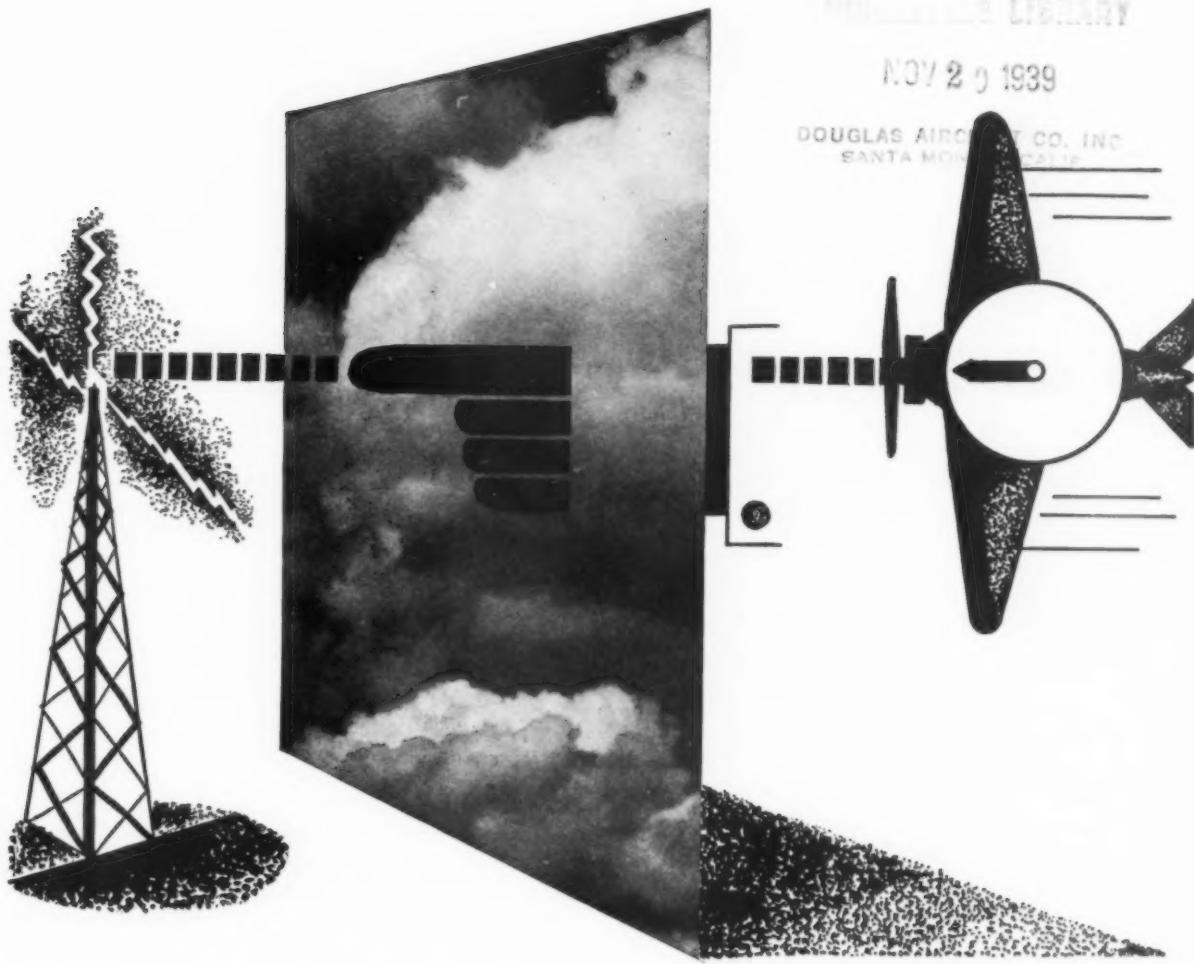
(Continued from page 1)

Douglas Aircraft Company, Santa Monica, Calif., and the Glenn L. Martin Co., of Baltimore, have been the biggest beneficiaries of recent French orders, so far not officially announced. The Douglas order is in the neighborhood of \$30,000,000 to supplement the previous \$12,000,000 order for 100 attack bombers. The Martin order is understood to be about \$16,000,000, all supplementary to previous large orders. Pratt & Whitney division of United Aircraft Corp., East Hartford, Conn., has received large orders for engines.

The bulk of foreign orders now on hand cannot be delivered until next summer at the earliest. Payrolls are reaching new highs and three shifts are or will be the order of almost all of the major plants.

Although accurate estimates of backlog were virtually impossible to obtain, a consensus showed that a \$350,000,000 total backlog for the aircraft and engine companies was conservative.

Biggest backlog in the industry is credited to Douglas Aircraft Com-



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LEAR DEVELOPMENTS, INC. Roosevelt Field, Mineola, L. I., N. Y. Cable Address: *Learavelop*. Western Representative: Wilbur J. Zepp, Los Angeles Airport, Inglewood, Cal.

18 EXPERTS NAMED FOR CAA RESEARCH

Selection and Training of Students in Pilot Program to Be Studied

The National Research Council made public Nov. 5 the names of those who will serve on a committee to study the selection and training of pilots in connection with the Civil Aeronautics Authority's program for 10,000 students in colleges and universities this year.

The research on training and selection of pilots "is, in our opinion, one of the most important programs on such a scale since aviation began," Robert H. Hinckley, CAA chairman, said. "Millions have been spent and magnificent results attained in materiel research. Yet in aviation personnel and its problems, despite the high percentage of aviation's failures that may be attributed to personnel, our information is, to say the least, inconclusive."

Members of the committee are:

John G. Jenkins, department of psychology, University of Maryland.

Carl E. Guthe, ex-officio chairman of the division of anthropology and psychology, National Research Council.

Comdr. James C. Adams, M. C. U. S. N., chief, aviation section, Bureau of Medicine and Surgery, Washington.

Conrad Berens, author of textbooks on ophthalmology, New York City.

Harold R. Bohman, clinician and private flyer, Baltimore.

Alexander Forbes, professor of physiology, Harvard Medical School, Boston.

Col. David Grant, U. S. A., Acting Chief, medical division, U. S. Army Air Corps, Washington.

H. M. Johnson, psychologist, Tulane University, New Orleans.

H. S. Liddell, physiologist, Cornell University, Ithaca, N. Y.

Ross G. McFarland, pilot fatigue expert, Harvard University.

Walter H. Miles, Yale University.

Capt. G. D. Murtagh, U. S. N., chief of personnel, Bureau of Aeronautics, Navy Dept., Washington.

L. J. O'Rourke, U. S. Civil Service Commission, Washington.

Leonard Povey, chief pilot inspector, CAA, Washington.

C. L. Shartle, U. S. Employment Service, Washington.

Col. A. D. Tuttle, U. S. A. (ret.), chief medical inspector, United Air Lines, Chicago.

Frank Fremont-Smith, psychiatrist, Macy Foundation, New York.

Maj. J. F. McBain, in charge of pilot training in office of chief of Air Corps, Washington.

The committee is now engaged in framing the series of practical questions which the CAA would like to see answered. The questions will be assigned for study and answer to those institutions in the pilot training program. Typical of these questions, the CAA says, is the amount of training time necessary for different maneuvers the student must learn.

Instructors Authorized

Charles Doyle, former secretary of the Nebraska Aeronautics Commission, and John Morrison have qualified as instructors under the CAA and soon will begin duties with Burnham-Miller Flying Service in Omaha. A. R. Burnham said the CAA has authorized his company to instruct 20 of the 40 students now attending ground school classes at the University of Omaha.

Wes Carroll (left) and his partner, Clyde Schlieper in their Cub seaplane in which they established a new world's endurance record at Rosamond Dry Lake, Cal. (International News Photo).

Signaling a New Record



12 Join Sportsman Pilots

New members of the Sportsman Pilots Association include J. M. Wells, Southbridge, Mass.; Mrs. Alma Harwood, Harrison, N. Y.; John Bromley, Jr., Philadelphia; J. R. Burleigh, Scranton, Pa.; George M. Ross, Ottawa, Canada; W. J. Stoddard, Atlanta, Ga.; Jack B. Hailes, Detroit; W. W. Harts, Detroit; Mrs. Anna L. M. Biddle, Chester Springs, Pa.; Vernon A. Dorrell, Burbank, Cal.; Howard Aircraft Corp., Chicago, and Louis D. Lighton, Culver City, Cal.

Indiana Group Meets

The third quarterly meeting of the Indiana Aircraft Trades Association, held recently at Purdue University, West Lafayette, Ind., considered the following subjects: "The CAA Pilot Training Program"; "The CAA Instructor Re-rating Program"; "Aviation Insurance Rates and Coverage," and "Work of the Indiana Aviation Fact-Finding Committee." Discussions on the subjects were led by Maj. Charles E. Cox, CAA private flying specialist for the region, and others. Present was Col. Floyd E. Evans, Michigan's director of aeronautics.

After 13½ Hours



Henry Chapman is shown here after he established a new light seaplane record by flying non-stop, non-refueling from New York to New Orleans on Oct. 12 in an Aeronca with a 65-hp. Continental engine. He flew 1,186 miles in 13 hrs. 35 min. (AMERICAN AVIATION, Nov. 1.)

Endurance Records

Smashed; Seaplane Stays Up 30 Days

Wes Carroll and Clyde Schlieper of Long Beach, Cal., on Oct. 29 landed their Piper Cub seaplane, powered by a 50-hp. Continental engine, concluding a month-long endurance flight after remaining aloft for 726 hrs. to smash the all-class endurance record. The old record, set in 1935, was 653 hrs. 33 min., made by Al and Fred Keys of Meridian, Miss. Carroll and Schlieper conducted their tour over Rosamond Dry Lake, Cal.

Earlier in the month, Oct. 23, Kelvin Baxter and Robert McDaniels landed at Muncie, Ind., in a Piper Cub after establishing a new world light landplane record of 535 hrs. 45 min. The plane was powered by a 55-hp. Franklin engine. The Hoosier flyers bettered the 343 hrs. 46 min. mark established Aug. 6 by Hunter and Humphrey Moody of Decatur, Ill., who used a 55-hp. Lycoming-powered Taylorcraft in their flight at Springfield, Ill.

The Keys brothers in 1935 established the all-class mark in a Curtiss Robin of 165 hp.

Baxter and McDaniels said they had been informed their record would stand in a different class from the mark set by Schlieper and Carroll.

Wiggins Named Distributor

E. W. Wiggins Airways Inc. of Providence, R. I., has been named distributor for New England for the Bellanca Cruisair, manufactured by Bellanca Aircraft Corp., New Castle, Del.

Furniture is Bulky So Merchant Flies Customers to Market

Here's a new commercial use for lightplanes that ought to give some fixed base operators some ideas:

R. H. McMurtie, president and general manager of the Huntingburg Furniture Co. of Huntingburg, Ind., has purchased a Stinson 105 not only to use for making trips to sell customers, but to bring customers to the plant to see his products.

"As you know, furniture is a bulky item and in selling from photographs we are making a compromise," he says. "Our thought is that by bringing our people to the factory a much more effective method of selling will result."

"In addition to this, we use the plane in contacting our people. We made a trip recently to Kansas City, Burlington, St. Paul, Duluth and Chicago in about three days which ordinarily would have taken more than a week."

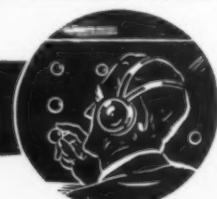
"Such savings as this, not to mention the advertising value that we gain by having a plane—will make this the most valuable piece of equipment that we have in our organization."



Flexible in design—dependable, continuous operation

AIRPORT RADIO RECEIVERS

AVIATION RADIO SECTION, RCA MFG. CO., INC., CAMDEN, N. J. • A SERVICE OF RADIO CORPORATION OF AMERICA



310 Instructors Are Approved in CAA's Re-Rating Program

The CAA's program of re-rating all instructors is progressing satisfactorily, it is learned, with 21 special inspectors having examined 577, approved 310, with 241 pending, as of Nov. 7.

Inspectors are giving preference to instructors who have indicated a desire to participate in the pilot training program. If an instructor does not pass the test, he does not lose his rating immediately, it is emphasized. He may continue to instruct under ordinary procedure until Oct. 1, 1940, by which time he must be re-rated or lose his rating entirely. An instructor who has not been re-rated cannot participate in the pilot training program, however.

All together, it is estimated that there is a minimum of 3,000 instructors to be re-rated. The 21 inspectors, who were specially trained at Randolph Field, are serving a dual purpose: getting instructors ready for the pilot training program, and training other inspectors who will then assist in the re-rating.

It was explained that the 241 cases listed as "pending" failed to meet the requirements in their first test. The inspectors have indicated, however, that such instructors will in all probability pass their second attempt.

Watson Heads S. C. Assn.

W. W. Watson, veteran Columbia, S. C., pilot, has been elected president of the South Carolina Aviation Association. Additional officers are Tom Motte, Greenville, 1st v. p.; H. Wayne Unger, Walterboro, 2d v. p., and Nell Foster Behr, Anderson, 3d v. p. in charge of S. C.'s women flyers. E. F. Markwood, Jr., assistant director of the South Carolina Aeronautics Commission, was renamed secy.-treas.

Hale Educates Public With Free Rides

A new wrinkle in educating the public to flying in lightplanes has been developed by Merrill R. Hale, president of the Narragansett Aviation Service at the Hillsboro State Airport, Providence, R. I., according to Almina Kodis.

Hale decided that one way to get people interested in flying was to give them free rides, and he hit upon the idea of making free rides possible by making arrangements with local merchants to give coupons with purchases. He sold the idea to a select list of filling stations and merchants who agreed that their share of the cost was cheap compared with the advertising and patronage.

For 25 tickets given with purchases, a free ride is provided, and for every 50 tickets the holder receives a free flying lesson. The idea caught on so well that Hale has started a free lecture service for the large number of visitors to the field.

Hale got into aviation by chance. He had a severe case of arthritis and the doctors told him to "take it easy." So he started hanging around an airport, got interested in flying, and formed the Narragansett Aviation Service. He's doing his free-ride operations with a Stinson 105.

6 Sections of 99's Elect New Officers

Six sections of the 99 Club have held annual elections with results as follows:

Southwest section (Cal., Nev., Ariz., Utah)—Ethel Sheehy, Fontana, Cal., governor; Marjorie Hook, San Francisco, vice-governor; Wilma Fritchey, Los Angeles, secretary; Ruth Rueckert, San Francisco, treasurer.

North central section (Minn., Iowa, Mo., Ill., Wis., Mich., Ind., Ohio, Ky.)—May Wilson, Schiller Park, Ill., governor; Belle Hetzel, Avoca, Iowa, vice-governor; Elizabeth Folsom, South Bend, Ind., secretary-treasurer.

Southeastern section (Tenn., Miss., Ala., Fla., Ga., S. C., N. C.)—Jessie Woods, Charlotte, N. C., governor; Nell Behr, Anderson, S. C., secretary.

Middle eastern section (Pa., W. Va., Va., Md., Del., D. C.)—Francis L. Allen, Pittsburgh, governor; LuLu Shank, Washington, D. C., vice-governor; Elizabeth Hazen, Easton, Md., secretary-treasurer.

New York, New Jersey section (N. Y., N. J., Conn.)—Mary Nicholson, New York, governor; Ethel Peckham, Westfield, N. J., and Mable Clemson, New York, vice-governors; Loretta Leonard, secretary; Margie White, North Caldwell, N. J., treasurer.

New England section (Me., N. H., Vt., Mass., R. I.)—Hortense Harris, South Boston, Mass., governor; Gertrude Meserve, Winchester, Mass., vice-governor; Ruth Barclay, secretary-treasurer.

Aeronautical Charts

The U. S. Coast and Geodetic Survey, Dept. of Commerce, Washington, D. C., has announced the following new regional aeronautical chart and a new edition of a regional aeronautical chart:

New Regional Aeronautical Chart

(Regional charts, embracing the area covered by some half-dozen sectional aeronautical charts, are lithographed in colors, showing airports, names of airports, beacons, compass roses, isogonic lines, weather broadcast, etc., in red; radio ranges in pink; flight lines in purple; railroads and topographic features in black; water in blue; areas of cities in yellow; and elevation in gradient tints. They are scaled 1:100,000 and sell for 75c.)

11-M. Oct. 1939. Size, 27 x 45". Located in latitudes 32°-38° north and longitude 114°-123° west, an area of some 300,000 sq. mi.

This is the eighth chart issued of this series of 17 regional aeronautical charts and is lithographed in 11 colors. It covers the region embraced by the following sectional aeronautical charts: San Francisco, Mt. Whitney, Los Angeles, San Diego and the west halves of Grand Canyon, Prescott and Phoenix.

New Edition of Regional Aeronautical Chart

(This cancels previous edition. Pilots are warned against using obsolete charts.)

15-M. Oct. 1939. Size 26 x 37". Located in latitude 26°-32° north and longitude 97°-106°30' west, covering an area of about 246,000 sq. mi.

Includes changes in air navigation facilities since the last edition.

Flying Watchmen

Endurance flyers Kelvin Baxter and Robert McDaniels were credited with awakening the occupants of a burning house at Muncie, Ind., during their 535 hr. 45 min. endurance flight which ended Oct. 23. Mr. and Mrs. Carlisle Floyd and children gave the flyers full credit for zooming low over their home at an early morning hour to awaken them in the midst of a fire that caused \$1,250 damage.

"All Clear"

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Bigger, Better Fair Exhibit is Promised; Randall Heads Group

An "even bigger and better" exhibit to represent American aviation at the New York World's Fair next year was assured at a recent meeting at which I. S. Randall, TWA's eastern manager, was elected president of U. S. Aviation Exhibit. Randall said the fair's Aviation Bldg. will be redecorated and that more planes will be added to the exhibit which this year attracted more than 5,500,000 visitors.

"More ships will be placed in front of the building and there is a good possibility that we will have one of the Army's Flying Fortresses on display," Randall said. "There will be six non-commercial ships as well as three from the Army and many within the hall . . . In all, we plan on staging a larger and better show than was possible this year when we were unable to open the exhibit until a month after the fair started."

Randall succeeds J. A. B. Smith, vice-president of Curtiss-Wright Corp., who was elected chairman of the exhibit board. Other officers named are J. B. Walker, United Air Lines' eastern manager; Vincent Bendix, president of Bendix Aviation Corp., and W. T. Piper, president of Piper Aircraft Corp., as vice-president; C. R. Speers, American Airlines' district manager, secretary-treasurer; and A. B. Christie, export manager of United Aircraft Corp., and M. W. Whiston, assistants to the secretary-treasurer.

North Beach Buses Barred Short Route

Requests seeking special privileges for airline limousines operating between New York ticket offices and the new \$40,000,000 North Beach Airport were denied Oct. 31 by Robert Moses, park commissioner and chairman of the Triborough Bridge Authority, who declared that he was prohibited by law from licensing airline cars to operate over parkways and bridges. He has no alternative, he said, but to place the limousines under regulations governing commercial vehicles such as buses and taxi-cabs.

Officials of carriers operating into North Beach had expressed the opinion that their limousine transportation to and from the airport should be regarded as a condition of civic expediency, but added that Moses' objections would make less than a three-minute differential in their schedules if they were allowed to use the approach linking the bridge with Grand Central Parkway. Should this approach be treated as part of the parkway, however, re-routing would add six to eight minutes to the run, it was indicated.

Thaden Acts for Porterfield on 1940 Cavalcade Committee

Louise Thaden, factory representative for Porterfield Aircraft Corp., Kansas City, Mo., has been named a committee member of the 1940 lightplane cavalcade which will be held in January. Florida will be the objective of the 700 to 1,000 lightplanes which will gather at various points in the country preparatory to the cavalcade.

Miss Thaden, as Porterfield factory representative, has been flying a De Luxe model 50 Porterfield in a sales tour.

CAA Employs Kirkpatrick

William S. Kirkpatrick of Easton, Pa., has been employed by the CAA as an inspector.

CAA Names North Beach, Newark As Co-Terminals for N. Y. Area

The long scrap between New York City and Newark over location of the airport serving the metropolitan area was settled Nov. 7 when the CAA named \$40,000,000 North Beach Airport and Newark as "co-terminals" with the warning that American Airlines, United, TWA and Eastern still have a "statutory duty" to furnish adequate service to the latter city.

Hearing on the matter, which turned into somewhat of a political battle and which saw CAA Chairman Robert Hinckley withdraw and refuse to take part in the final decision, was held in September. American asked that New York be named as an additional point on AM7, Newark-Chicago, and AM18, Boston-Newark, while United, Eastern and TWA requested that it be designated as the eastern terminal on AM1, Newark-San Francisco; AM5, Newark-New Orleans; AM6, Newark-Miami, and AM2, Newark-Los Angeles. The last three companies sought to have Newark changed from the terminal to an intermediate point.

The Authority issued no ruling on just what constitutes "adequate service" for Newark, i.e., it did not indicate how many stops should be made at that city. "In rendering service to these two points, the applicants should be authorized to originate or terminate schedules at either point, and to make stops at both points on any schedule," the decision said, adding in another place that "Newark . . . will be retained in the certificates as a point to be served, and the statutory duty of the applicants to continue to render adequate service to such point will continue unaffected."

Two issues, the decision stated, were involved in the case: (1) the right of the applicants to engage in air transportation to and from New York, N. Y., in addition to Newark, and (2) permission to utilize a particular landing area or areas in rendering service to New York.

Regarding the first issue, the opinion said: "It is apparent that the interest to be considered whenever, as in the present case, the public convenience and necessity becomes an issue, is the national interest; that the 'public' whose convenience and necessity is to be served is not limited to the public within the corporate limits of any municipality."

The Authority pointed out that the New York-Northeastern New Jersey metropolitan district had a population of 10,901,424 spread over an area of 2,514 square miles, according to the 1930 census. While the Newark Airport was in a position to render convenient service to the portion of this district lying west of the Hudson and to the lower regions of Manhattan Island, the CAA found that the eastern half of the district was without such service.

One of the main arguments used by the city of Newark at the hearing, in an effort to retain all schedules, was the fact that a committee appointed in 1927 by Secretary of Commerce Herbert Hoover to recommend suitable airport facilities for the metropolitan area favored Newark, although listing certain other sites. The Authority emphasized the fact that although the committee favored Newark "it pointed out that there was, even in 1927, an immediate need for an airport in the Queens-Flushing Bay area . . . If the necessity of an airport available . . . in this area was so apparent to an impartial, fact-finding committee in 1927, the need today, in view of the tremendous increase in the importance of air transportation in the past 12 years, must be immeasurably greater."

Regarding the stacking of planes over Newark, a point testified to by

various airline officials at the hearing, the decision stated that two airports may be expected to improve this condition materially. On the point of increased expenses which would be incurred by the four airlines at North Beach, the Authority found that "making air transportation more directly available to such a large community of people" justifies such expense.

"We find that the use of two airports for regularly scheduled air transportation service to and from the metropolitan district, located so as to be readily accessible to the centers of population on each side of the Hudson River, is necessary at the present time," the decision said. In another section the Authority stated that "we find that the specification of New York, N. Y., and Newark, N. J. as co-terminals on the routes described in the certificates involved in this proceeding, and the authorization to engage in air transportation to and from such points on each of the routes described in such certificates and with respect to the classes of traffic now authorized on each of said routes, subject to the provisions of such certificates, are required by the public convenience and necessity."

On the second issue, i.e., permission to utilize a particular landing area, the CAA found that North Beach is in the center of the metropolitan area east of the Hudson and connected by express highways to the territory to the north and to the west of Long Island. It also found that the Bronx and Queens, to which North Beach is most accessible have a population of 2,907,059, more than one hour removed from Newark.

Taking all the evidence together, the CAA stated that North Beach is 10-15 minutes closer to 42nd St. area by ordinary means of transportation than Newark Airport. It added that a large percentage of the passengers are bound for the Grand Central area or north thereof.

"On the basis of the evidence, we find that the North Beach Airport is located so as to be readily accessible to the greater part of the eastern half of the metropolitan district and that its use will materially improve air transportation service to large and important transportation centers," the decision said. "We find . . . that excellent train service is available in the vicinity of both airports. Newark has the advantage for service to the south, whereas North Beach is more convenient for service to New England and points in New York State. Both airports afford good connections for service to the midwest and west, although Newark offers a greater variety of connecting lines and more frequent schedules as a result."

The CAA agreed with the Post Office that two airports will improve the air mail service, pointing out that the seaplane facilities at North Beach will be an advantage.

Nothing in the record would indicate that North Beach is unsafe, the opinion said, adding, however, that operations will not be permitted until "the safety thereof has been established and air carrier operating certificates with respect thereto have been issued."

Peruvian Flight Interrupted

Flying a Barkley-Grow, Comdr. Humberto Gal'lino of the Peruvian Air Force and his brother, Capt. Victor Gal'lino, landed on Nov. 3 at Lima, Peru, completing a 4,000-mi. flight that began Oct. 29 in New York. Their projected New York-to-Lima non-stop flight was interrupted on Oct. 30 on Puna Island, southeast of Guayaquil, Ecuador.

Air-Track Sues Govt. on Infringement Charge

Charging the CAA with infringing its patents in the instrument landing installation at Indianapolis Municipal Airport, Air-Track Manufacturing Corp., Washington, D. C., on Oct. 25 filed suit in the Court of Claims for \$15,000 against the government.

Equipment at Indianapolis was installed by the International Telephone Development Corp. for the CAA, it was said. The corporation is a subsidiary of the International Telephone and Telegraph Co.

The patent referred to is held by Washington Institute of Technology and licensed exclusively to the Air-Track company for instrument landing use. Theophile E. Brookstedt is the inventor.

The Justice Dept.'s division of litigation under J. F. Mothersead will handle the suit for the government.

Aero Groups

Hastings, Neb.—Ray Beebe, manager of the municipal airport here, was elected president of the Aeronautic Association of Nebraska recently. Other officers are Barney Burnham, Omaha, v. p.; Gilbert Dooley, Omaha, secy.-treas.; John Clinch, North Platte; E. J. Sias, Lincoln, and Alva White, Lincoln, advisory board members. Charles Doyle, is retiring president; White was v. p. and Beebe secy.-treas.

Omaha, Neb.—Marvin Berlin has been elected president of the University of Omaha Flying Club. John Noel was chosen v. p. Arthur Myers is instructor.

Stevens Point, Wis.—Archie Towle, Wausau, has been elected governor of the Wisconsin NAA chapter. J. B. King, Milwaukee, is vice governor; Walter Wozalla, Stevens Point, secy. and Carlyle Godsky, Racine, treas. King was named chairman of the 1940 air tour to be held in connection with the state fair.

Garden City, Kan.—Incorporated under state laws, the Garden City Flying Club Inc. has taken delivery on a Taylorcraft powered by a Continental 65. President is W. C. Scales and instructor is Bud Higgins. Club has 10 members.

Niagara Falls, N. Y.—The Niagara Frontier Pilots Association now has 45 members. Fred Lewis is president, and chairmen of committees are Charles Brooks, Jermain Chappell, Homer Campbell, Frederick B. Downing Jr. and Orville Kinsley.

Kansas City, Mo.—New members of the Kansas City unit of the WNAA are Merlina Purse and Margaret Potter, both of TWA, and Virginia Martin of Bredouw Aero. Corp., and Therese Rhiner of B. C. Christopher & Co.

Indianapolis, Ind.—Sky Club Inc., of which Joe Richards is president and founder, began operations by acquiring a 50-hp. Aeronca. Other officers are William Drake, v. p., and N. B. Nay, secy.-treas. Instructor of the 20 members is H. H. Hunter, former Army pilot.

Albuquerque, N. M.—Mrs. Louis Mackel has been elected president of the Albuquerque unit of WNAA to succeed Mrs. B. F. Roberts who remains as secretary of the national association. Other officers of the local unit are Mrs. M. B. Joyner, v. p.; Mrs. Dale Shockley, secy., and Mrs. Mitchell Dickens, treas.

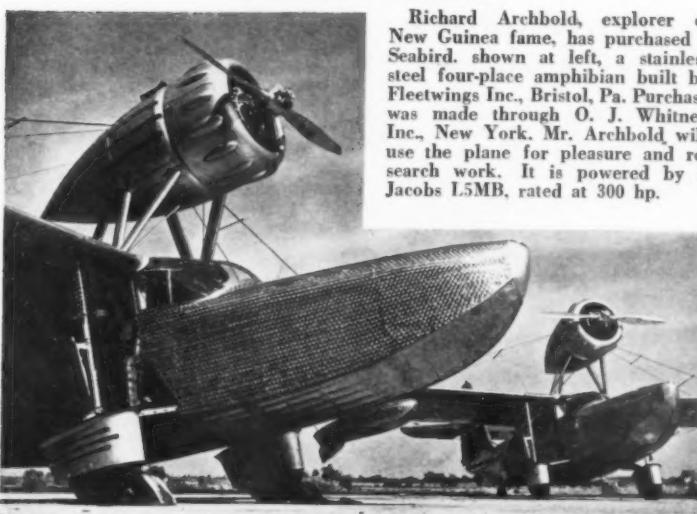
Borg-Warner Names Gray

Samuel W. Gray has been named general manager of the Marvel-Schebler Carburetor Div., of Borg-Warner Corp. at Flint, Mich., it was announced on Nov. 6.

Rogers Buys Fairchild

Charles "Buddy" Rogers, orchestra leader and former movie star who recently took delivery on a new Stinson 105, has purchased a new Fairchild 24 equipped with radio and powered by a Warner 145-hp. engine. Rogers is using the four-place Fairchild for personal transportation between engagements and for pleasure flying during his stopovers at various cities.

Archbold's Seabird



Richard Archbold, explorer of New Guinea fame, has purchased a Seabird, shown at left, a stainless steel four-place amphibian built by Fleetwings Inc., Bristol, Pa. Purchase was made through O. J. Whitney Inc., New York. Mr. Archbold will use the plane for pleasure and research work. It is powered by a Jacobs L5MB, rated at 300 hp.

Air Shows

Adrian, Mich.—Ken Morley, manager of Adrian Airport, and a group of local flyers arranged an air show at the field recently in which Walter Hulserer did stunt flying. Miss Bernice Easter, Adrian, was the only woman pilot in the show.

Charlotte, N. C.—An air show sponsored by the two Charlotte National Guard units was held at the old city airport on Oct. 15. Appearing on the show were Jesse Bristow, Cy Gates, Robert St. Jock, Tom Stauch and Jack Huber. Lt. R. M. Fridy was in charge of arrangements, and the announcer was Bill Sweet, Jr.

Fort Myers, Fla.—To stimulate interest in an election to be held in connection with the proposed \$212,000 airport, all Florida flyers were asked to compete in an air meet held Oct. 29.

Fredericksburg, Va.—An air show was held recently at Nottingham Field which is operated by Mrs. Elizabeth Phillips of Keene, secretary of the 99s. Among winners in events were Noel Ellis and Russell Swift of Richmond and Elizabeth Coles of Keene. About 40 flyers participated.

Knoxville, Tenn.—The American Legion and Knoxville newspaper sponsored an air show held Oct. 15 at McGee Tyson Airport. Managed by Hugh Thompson, the show presented Capt. Harold Johnson, Buddy Batzel, Don Walters and Dick and Jimmy Granere.

Redding, Cal.—About 1,000 persons attended the concluding program of the Redding Flying Club's two-day air show at Municipal Airport. Exhibitions were given by Dale Fry, Don Hemsted and William Withrow. Contests were won by Harry Munday, Earl Weaver and Ray Varney. Seventeen planes participated.

Santa Ana, Cal.—Scores of pilots took part in Santa Ana's first air show, known as Pacific Western Air Races, on Oct. 14-15.

Youngstown, O.—About 3,500 persons witnessed an air show recently at Watson Airport in which Walter P. Decovich won a trophy in the free-for-all race. Others competing were William D. Jones, Sam Christy, Sam Dillinger, Lloyd R. Elliott and Guy Gulley. Demonstration flying was done by W. B. Skelton. Promoter of the show was Clarence Conroy.

43 3/4% Are Cubs

Production of 712 Cubs by Piper Aircraft Corp., Lock Haven, Pa., during the first six months of 1939 represents 43 3/4% of total production of U. S. aircraft for civil use during that period according to CAA figures. Total U. S. production for the six months reached 1,627 planes. T. V. Weld, Piper vice-president, said that during the last five years Cub production has represented upwards of 25% of total U. S. civil plane production.

Factory Will Occupy 145,000 Square Feet

Additional details of Aviation Manufacturing Corp.'s new Nashville, Tenn., aircraft factory reveal that the entire unit will consist of 145,000 sq. ft. instead of 125,000 sq. ft. as originally announced. The manufacturing unit will occupy 125,000 sq. ft. and administration and engineering offices will take up the remaining 20,000. Buildings will be concrete, steel and brick.

"The manufacturing unit which will be located behind the two story administration building will be aircooled in summer," W. H. Beal, president, said. "It will be 405 ft. long and 300 ft. wide. The administrative office and engineering building, also air-conditioned, will be 240 ft. long and 40 ft. wide."

Dimensions of the assembly division will be 125 by 300 ft. Unobstructed doors at each end of the division will be 125 ft. wide by 24 ft. high.

Screwbird Posters

Shell Oil Company has distributed to 2,500 airports the first of a series of monthly posters featuring "Lew the Screwbird" in an effective safety campaign to drive home to pilots a few fundamental rules. In cartoon style, the first poster was devoted to the rule of "Keep the nose down." "Don't be a Screwbird" is the slogan. Other posters will be devoted to maintaining adequate altitude at all times, turning on the gas valve, traffic regulations, etc. The Air Safety Board recently found that 62% of non-airline fatalities during a 3-month period were because the nose was held too high.

Gets Swallow Post

J. A. McCullough, formerly employed by the Glenn L. Martin Co. and Curtiss-Wright Corp., has been made plant operations superintendent and chief instructor of Swallow Airplane Co., Wichita, Kan.

Piper Developing Amphibian

Piper Aircraft Corp., Lock Haven, Pa., is reported to be working on experimental construction of a three-place, all-metal, spot-welded amphibian to be equipped with a 75-hp. engine operating as a pusher. Ray Applegate is the engineer in charge.

XPBS Back in Service

The Sikorsky XPBS patrol bomber was returned to naval service recently following a lengthy repair job at the Vought-Sikorsky division of United Aircraft Corp. at Stratford, Conn. The four-engine flying boat was badly damaged by heavy seas which buffeted it after an unscheduled landing near Newport, R. I., last summer.

City Will Remove Hazard

Allentown, Pa.—An ordinance authorizing the city to secure by purchase or condemnation a small tract of land classed as a hazard for planes using Allentown-Bethlehem Airport, has been passed by the city council.

Virginia Lists New Ports

The following new airports in Virginia have been licensed during the last year it was announced recently in a bulletin of the Virginia Division of Aeronautics:

Harcum—One landing strip, 1,950 by 200 ft.; no hangar.

Covington—Clifton Forge—At Lowmoor; one landing strip e/w, 2,000 by 350 ft.

Fredericksburg—Nottingham Field—One landing strip open ne/sw, 3,600 by 700 ft.; gas & oil.

Emporia—Landing strip e/w, 2,000 ft.; nw/se, 1,500 ft.

Cadets Arrive at Lincoln



The above 12 West Point cadets arrived recently at Lincoln, Neb., for three months of primary flying training at the Army Air Corps Training Detachment of the Lincoln Airplane & Flying School. They then will spend three months at Randolph Field, Tex., for basic training and three months at Kelly Field, Tex., for advanced flying training.

Vultee Research

After considerable "research" on the part of someone at Vultee Aircraft Div. of Aviation Manufacturing Corp., Downey, Cal., the company announced that there are from 90,000 to 100,000 rivets in the YA-19 attack plane and approximately 60,000 rivets in the Vultee Valiants.

Stearman Begins Work on Brazilian Contract

An order approximating \$300,000 for a fleet of Stearman primary training planes has been placed with Stearman Aircraft Div. of Boeing Airplane Co. by the Brazilian Army Air Corps. According to J. E. Schaefer, Stearman general manager and Boeing vice-president, the contract has been validated upon completion of negotiations that have been under way for some time.

Work will begin at once on the new Brazilian planes at Stearman's plant in Wichita, Kan. Designated technically as model A75L3, planes will be equipped with Lycoming R680-B4D engines and McCauley forged steel propellers. The fleet will be delivered during the spring of 1940.

This is the second sizable order Stearman has received from the Brazilian Air Corps in the last few years. First was for a fleet of advanced training and expeditionary type planes, model 76C3.

The division recently completed delivery of a fleet of Stearman advanced training planes for the Philippine Army Air Corps. Order, involving "a substantial number of planes," was delivered in three shipments.



Best Month In History!

CHICAGO &
SOUTHERN'S

PASSENGER
REVENUE

UP

30%

FIRST TEN MONTHS
1939

AS COMPARED WITH SAME
PERIOD OF 1938

We are proud to play our part in serving a wide national network of airways and we appreciate the cooperation of our connecting carriers.

CHICAGO & SOUTHERN
Air Lines

20c a Mile Mail Pay Sufficient for Feeder Lines, Ben Cole Says

Urge CAA to Use Foresight, Not Formulae, in Deciding Upon New Routes; Says Feeders Can Develop New Trade Areas

A feeder airline operating a small twin-motored ship with a 1000 pound payload will pay its way on 20¢ a mile for mail, a net of 5¢ a mile per passenger, and present air express rates, Ben E. Cole, of Airlines Charter Service, Boston, told the National Association of State Aviation Officials at the annual meeting in New Orleans Oct. 12.

Discussing the feasibility of feeder routes, Mr. Cole said the above figures were based on passenger and express load factor of only 35% as against the 60 to 70% load factors on some of the large airlines. He said he arrived at these figures after thorough study and after they had been checked by airline executives and airplane manufacturers, and such a feeder line would maintain full airline standards. Each plane must be operated on an average of 600 miles per day six days a week, however.

Long an advocate of feeder routes which would serve smaller communities by tying in schedules with trunk lines, Mr. Cole said there was "a very serious defect" in projecting any feeder line system on a formula based upon present population, postal receipts, trading center areas, etc., because such a formula did not take into account the potential traffic and industry which such feeder lines could easily promote.

"Such a formula tells us what has happened, not what is to happen in the future," he said. "It doesn't show, for example, that a cellulose plant would be located in Podunk, if passenger and mail air service was provided, it doesn't show the potential traffic between town 'x' and town 'y,' perhaps separated by mountains or other terrain barriers which only the airplane can surmount.

"Only actual field study can get such facts. You must talk with the man who might order the erection of that cellulose plant, you have to talk with the shippers and buyers in town 'x' and town 'y,' if you are going to anticipate demand instead of merely meeting it. Our country has developed rapidly because our forefathers were continually anticipating the future, not merely meeting the present.

"Railroads were run out into the plains of the central states when there wasn't a citizen to five miles of track. Their existence brought in the people, built the central states as we know them today. No formula based upon population, postal receipts, and trading center areas indicated a need for those railroads. Foresight did, and certainly the results have justified that foresight.

"It may seem far stretched to maintain that a feeder route will have a vital effect on the future of the communities it will serve, when, at the start, such a service is probably going to consist of a relatively small plane making a stop or two a day at each station, where it will deliver and pick up a few letters, an express package or so, and occasionally a passenger.

"But it isn't many years since that this was all that our primary airlines were doing. Comparatively speaking, it is all that the western railroads did when they started. While traffic on feeder routes will probably grow slowly, I believe that there relative value to the communities they serve will prove greater than that of the primary routes to their cities.

"There are several reasons for this assumption. First, the primary route competes with our fastest transportation, usually running on frequent schedules; the feeder route will compete with the motor bus and the local train, usually running on infrequent schedules. Second, through connections with primary lines, the community on the feeder route will profit by their service plus the service given by the feeder line on which they are located.

"Third, and perhaps most vital, is the fact that most industries would prefer a small town location if it is accessible. The motor truck, covering two or three hundred miles a night, transports the supplies for and the products of a small manufacturing community. It has already made many new localities into production communities. But there has been little improvement in passenger or mail service."

After discussing numerous detailed matters pertaining to proposed feeder route operations, Mr. Cole concluded by emphasizing the need for education on the value of these routes.

"We cannot start these feeder lines until mail pay is available to make them self sustaining," he said. "To get it, we must show our Congressmen how little mail on these routes will cost, and what the service will mean to their constituents. It will cost money for the research and preparation of charts and other substantiating data, but if that cost could be distributed among those who will benefit from the service it wouldn't amount to a mill a person.

"Perhaps the chambers of commerce, the business clubs such as Rotary, Lions and Kiwanis would undertake to sponsor this work, underwrite this educational program; certainly their members would be the chief beneficiaries. I believe it would be certain to get results, for such public demand, graphically presented, will convince any Congressman of the value of such a service to his constituents and to aviation; and of its importance as an aid to the defense and future development of our country."

Frank Ambrose Opens CAA-Approved School in Long Island City

Frank Ambrose, president of the Aviation Institute of New York, has announced that his school has received its letter of recognition from the Civil Aeronautics Authority for its airplane and engine courses requiring one year for completion to qualify for the A & E examination for the CAA certificate of competency.



Daniel J. Ambrose

Brimm, co-author of "Airplane and Engine Maintenance," "Aircraft Engine Maintenance," and author of "Seaplane Operations," is school consultant and supervisor of instruction. The school occupies 6,500 square feet of floor space and has an additional 9,500 feet available as required and will conduct day and night classes.

The school is located at Queensboro Bridge Plaza, North and Crescent St., Long Island City, New York, 10 minutes by subway from Times Square and 10 minutes by automobile from New York's new municipal airport.

The institute is owned and operated by Frank Ambrose Inc. Ambrose has been in the aviation industry since 1917 as former air mail pilot, U. S. Army Reserve pilot, manager of Curtiss Wright airports at Valley Stream, L. I., and Rockland, Me., and since 1932 has operated his own company as dealer and exporter of used airline airplanes, engines and parts. He is well known both in this country and abroad.

Pursuit Group to Moffett

Removal of the Army Air Corps' 20th Pursuit Group from its present station at Barksdale Field, Shreveport, La., to Moffett Field, Sunnyvale, Cal., on or about Nov. 15 has been announced by the War Dept. Commanded by Lt. Col. Ross G. Hoyt, the group consists of Headquarters and Headquarters Squadron and the 55th, 77th and 79th Pursuit Squadrons, having in all 66 officers and 335 enlisted men. The move is to be made by air and rail.

Camouflaged Planes at Western Front



From "somewhere in France," this picture, passed by the French-British censors, was radioed to New York from Paris. It shows two camouflaged planes which are being used in the French liaison service. Task of the pilots of these planes is to carry messages and in some instances, high ranking army officials, from one point of the battle line to another. (International News Photo).

NIGHT PICK-UPS BEGIN ON NOV. 15

All American Demonstrates New Methods to Authorities; Satisfactory Results Reported

Following several months of experimentation, All American Aviation Inc. on the night of Oct. 29 gave a public demonstration of the air mail pick-up service before Post Office and CAA officials at Bellanca Field, Wilmington, Del.

After the demonstration, Richard C. du Pont, president of All American, announced that the company would begin night operation on Nov. 15 on the company's Philadelphia-Pittsburgh route at Grove City, Butler and Natrona, Pa., stations where the system will be tested under actual operating conditions.

Each air station is equipped with two 40-ft. staffs topped by a flag which will be lighted in outline with a ribbon of neon. Flying range is marked by a 12-ft. horizontal bar of neon mounted on a frame 10 feet above the ground. Regular installation calls for a range light on each side of the station at a distance of about 175 feet in a straight line from the staffs so that an approach may be made from either direction.

Ordinarily, current will be wired into the station, but where this cannot be done except at prohibitive expense, storage batteries will be used. The station at Bellanca Field, where all of the night flying experiments of the pick-up have been made, is powered in this way and the method has proved "highly satisfactory."

In regular operation, the station attendant will switch on the station lights 15 minutes in advance of the plane's arrival and will turn them off immediately after delivery and pick-up have been made.

Maj. Hal Bazely, All American operations manager, who has been pilot on the experimental flights, reported that the lighted station under normal conditions can be seen plainly from the air at a distance of six miles, which is farther than it can be seen in daylight, and that pick-up can be made as easily at night as by day.

Work of developing the night-flying equipment was conducted under the supervision of Mr. du Pont and James G. Ray, vice-president.

Pilot in the first public demonstration was Holger Hoiriis of Wilmington, a regular All American pilot. Pick-up operator was William Burkhardt of Martinsburg, W. Va., who is regularly employed in that capacity.

New Pick-Up Schedules Advanced for Winter

Winter schedules on the two air mail pick-up routes (AM1001 and AM1002) which provide daily air service for 58 cities in Pennsylvania, West Virginia, Ohio and Delaware became effective on Nov. 1, it was announced by Richard C. du Pont, president of All American Aviation Inc., Wilmington, Del., operator of the lines.

Only the afternoon schedules on the two routes which extend between Philadelphia and Pittsburgh and between Pittsburgh and Huntington, W. Va., will be affected by the change. These will be advanced from a half hour to 45 min. at each point to allow daylight arrivals of the planes at their overnight terminals.

Altoona, Pa., now is served from its own air pick-up station located on Altoona Airport at Duncansville, of which C. E. Price is manager. This service became effective Nov. 1.



The Birdmen's Perch

For those red-blooded pilots who admire nothing more than a chance to get all revved up swapping yarns that soar to the stratosphere, the Perch still offers the world's shortest-cut to a sheepskin. One of our Whopper Diplomas goes each month to the liar spinning the whoppinest story with Gulf Aviation Gas as its hero. Simply send your entry to:

"Tattered Wing-Tips,"
Editor, "The Birdmen's Perch,"
Room No. 3800, Gulf Bldg., Pittsburgh, Pa.

SISTERS-UNDER-THE-SKIN DEPT.

Pinochle widows and Gulf refining engineers might not seem to have a lot in common . . . but they have!

No wife is satisfied that she has flushed all the winnings out of the old man's trousers with just one shake. She's a cinch to go through the pockets as well.

We're just as thorough when it comes to refining our Gulfpride Oil. We know the ordinary methods used on all oils shake out a lot of carbon-formers. But we use also the famous Gulf-exclusive Alchlor process. This refining miracle digs down far deeper into the choice 100% Pure Pennsylvania and comes up with plenty more sludge and dirt.

That's why Gulfpride gives you more lubricating power per drop—more protection for your motor. It's as clean as the old man's pockets.



FOR THE MATH-MINDED

J. L. Centanni, of New Orleans, tied this month's problem to a spare wrench and dropped it from a confusing altitude into T. W. T.'s right-hand desk drawer. Confidentially, we had to use the wrench to help solve it.

A big airport's hangars house 200 planes—some two-seaters and some four-seaters. The total number of seats is 464. How many two-seaters, and how many



four-seaters are berthed on the field?

(We can't forward the wrench to you. But hurry your answer in to "Tattered Wing-Tips" and we'll check it with the official one.)

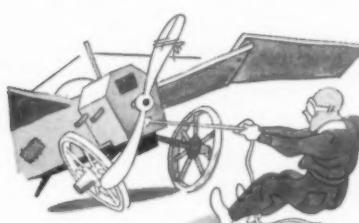
THIS MONTH'S WHOPPER

Dear Wing-Tips:

Here's one I'm swearing to on a stack of fish stories and Chamber of Commerce brochures.

About three years ago I got me one of those little gasoline, washing-machine motors and built me an airplane, using orange boxes, burlap bags, clothes-line wire, and a pair of old buggy wheels.

Well, sir, finishing time comes and goes and then comes testing time. I gets my creation out to the airport, dumps in some ordinary gas, and flips the prop over till she takes. Then when the motor is



warmed up good, I hops in and opens her up. But she won't budge!

I gets out behind and poooshes—she won't budge!

I gets out in front and pooooooollllss . . . she still won't budge!

After a time she's out of gas so I go over to a different pit and come back with a cupful of G. A. G. 'Course I wouldn't have put in more'n a few drops if I was to foresee the future. But not being a prophet, I dumps the whole cup in the tank and flips the prop.

Well, sir, that plane done the strangest thing! IT JUMPED INTO THE AIR LIKE A SHOT-GUNNED RABBIT AND WAS GONE!
Just like that!

That was three years ago and I didn't see hair nor hide of my baby till the other day when I was visitin' around over to the airport. All of a sudden that flying orange crate comes bustin' out of the sky followed by a coupla eagles, a condor, two or three falcons, half a dozen assorted hawks, and the toughest-looking humming bird you ever saw. In no time at all the whole flight banked in to a landing and taxied up menacingly to the GULF AVIATION GAS PIT!



Yes, sir, Major, that truant crate finally run outa' gas and dropped in with the mob for more of the same!

Kenneth Reid

Gulf Oil Corporation and Gulf Refining Company . . . makers of



**GULF
AVIATION
PRODUCTS**

GREAT FALLS PORT BUILT FOR FUTURE

Many Innovations Give Montana City Superior Facilities; Cost Is \$328,000

Without peer among airports for cities of its size and ranking among the finest airports in the world from point of view of planning and utility, the Great Falls, Mont., Municipal Airport is one of this year's crop of landing facilities now placed in use. A product of a group of air-minded citizens, the airport serves Western Air Express and Inland Air Lines and has immigration offices ready for the expected airline link to Lethbridge, Canada. Among those who labored for the project were A. J. Breitenstein, nationally known secretary of the Great Falls Chamber of Commerce and avid air enthusiast, and J. J. Flaherty, chairman of the chamber's airways committee.

There are four runways ranging in length from 6,040 feet to 4,400 feet. The hangar, of cement and steel, is 125 feet deep and 238 feet in over-all width with a door opening of 36 feet by 200 feet. A machine shop 30 by 100 feet is at one end. The hangar proper is well illuminated and is heated by side wall and overhead thermostatic controlled unit heaters.

One of the innovations in the hangar is an automatically controlled unit which shuts off the heat when the hangar door is opened. The door, 200 by 36 feet, is of the canopy type with an 18 foot overhang when opened. It is easily operated and is understood to have cost \$40,000.

The administration building has a total floor area of 13,085 feet. It is of combination steel frame and mill construction set-up with stucco exterior. Two 180-hp. boilers supply heat to both administration building and hangar. Storage rooms and showers for airline personnel are in the basement.

On the main floor there is an unencumbered floor space of 40 by 48 feet. An observation room looks out over the field, separating spectators from passengers who use side entrances. The dining room occupies one wing of the structure and is laid out in semicircle with windows giving a full view of the field—one of the very few instances where diners at airports can view the planes from their tables. Immigration officials and customs have two rooms.

The observation room on the field side is semi-circular in shape with a 38-foot width and a radius of 25 feet. Steel windows give an unobstructed view. The airlines ticket and baggage offices open directly on the lobby. Behind this are five private offices for airlines while across the lobby are rooms for the Post Office Dept., field superintendent, the airport commission, and a commodious emergency room.

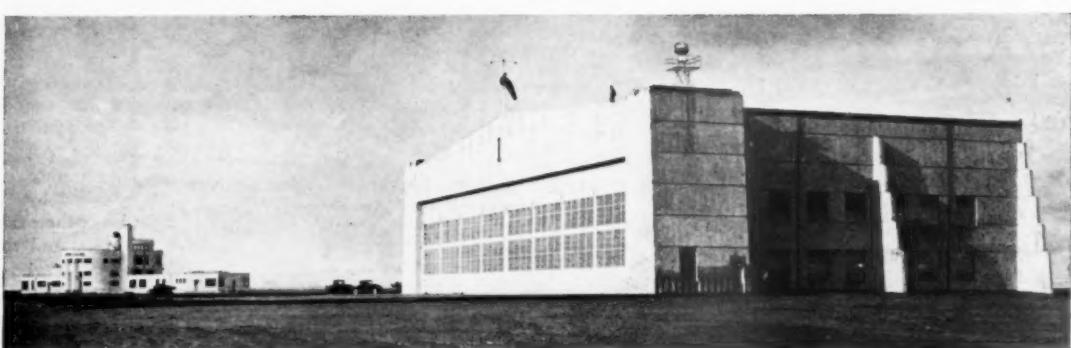
The balcony off the lobby contains stewardess and pilot emergency sleeping quarters. Other rooms on the second floor are for air traffic control, CAA, weather bureau, and a pilot's lounge.

Above the dining room is a roof garden where lunches to patrons can be served on pleasant days. On the opposite wing roof is weather equipment such as rain gauges, thermometers and ceiling light controls easily accessible to the weather bureau office.

On the third floor is the airport control room, circular in shape and circled by windows to give 100% visibility of the field. Also there is a balloon inflation room and a theodolite room with a copper, orange-peel revolving observatory type dome.

The administration and hangar buildings are flood lighted as an additional safety feature and the administration building is equipped with both exterior and interior public address systems. All

Building With Vision for Beauty and Utility



Three views of the buildings at Great Falls, Mont. Upper view shows auto entrance, center view shows airport side and lower view shows both hangar and terminal building.

field boundary lights, floods, obstruction lights, beam and wind cone lights are controlled from the airport manager's office.

Plans for the two structures were drawn by Architect Angus McIver of Great Falls, and approved by Paul Morris, now CAA regional engineer at Portland, Ore. The buildings were constructed under a PWA grant and local bond issue involving a total of \$328,000.

Washington airport experts consider the Great Falls terminal to be without equal in the nation for a city of its size.

Imperial, Air France Service, London-Paris, on New Basis

London to Paris air passenger service began on a war-time basis Oct. 11 with Imperial Airways and Air France co-operating equally to run two return trips daily between the cities. The British are using D. H. Frobisher

equipment and the French their Dewoitine tri-motors, some reports indicating that these and other commercial transports in the war zone may soon be painted orange. Although the actual air voyage is not much longer now than during peace time, the journey time from London to the center of Paris has been increased to four hours by lengthy take-off formalities.

Timm 'Plastic' Plane to be Completed Soon; May Exceed 410 mph.

R. A. Powell, vice-president and general manager of Timm Aircraft Corp., Van Nuys, Cal., recently disclosed that his firm's initial "plastic" plane, a two-place tandem trainer with a 160-hp. engine, stands within three weeks of completion.

Powell added that the Howard Hughes pursuit-racer, for which manufacturing rights have been bought by Timm and which is a prime asset in the current 425,000-share stock issue of the company, also will be made of this plastic material.

The Timm "plastic" is triple-laminated spruce plywood impregnated with phenol (bakelite) binding. Powell says the substance is extremely strong, fireproof even under the flame of a blowtorch, and easily moldable into fuselage, wing and tail parts. On the trainer, for example, engines ranging from 90 hp. to 425 hp. can be installed without extra stressing.

Powell said labor cost in producing these planes will be "only a fraction" of the cost of making duralumin ships. He added that mass production will be possible with this "plastic" in the event of a national emergency. Molded, the fuselage will be perfectly smooth (without rivets, seams or overlaps); the wings will be two-piece and shaped.

The Timm-Hughes plane, equipped with a 1,250-hp. engine, will do "better than 410 mph." Powell disclosed.

\$8,330,000 Award

For Puerto Rico Base

The Bureau of Yards and Docks on Nov. 1 announced that contracts for construction work totaling \$8,330,000 had been awarded for a naval air base on Grande Island, San Juan, Puerto Rico. Contract was awarded to the Arundel Corp. and the Consolidated Engineering Co. of Baltimore.

The figure increased to a total of about \$38,000,000 the contracts let for aviation bases in the Atlantic and Pacific within recent weeks.

Additional bases, in Alaska—at Sitka and on Kodiak Island—will cost about \$12,740,000. Other bases for which contracts have been let are Kachemak Bay, Hawaii, \$5,714,000; Pearl Harbor, Hawaii, \$2,633,000; Midway Island, \$3,720,000; Johnston Island, \$1,030,000, and Palmyra Island, \$1,510,000.

Planes Encroach on Auto Shows

A new trend in airplane merchandising has been tested by Stinson Aircraft Div. of Aviation Manufacturing Corp., Wayne, Mich., by exhibiting 105's at four automobile shows.

The planes were shown at the Detroit Automobile Show by General Aeronautic Corp.; at the St. Louis show by Clyde E. Brayton of Brayton Flying Service Inc.; at the Erie (Pa.) show by Nell R. McCray, and at the Boston show by Inter-City Airlines Inc.

Details of Vought-Sikorsky S44 Boat Revealed at CAA Hearing

American Export Will Provide for 12 Passengers in Three Compartments; Ship Is Similar to Navy's Model Except for Higher Horsepower

Despite the lid of secrecy clamped on because of Navy restrictions, certain details of the 12-passenger Vought-Sikorsky S44 four-engine flying boat, proposed to be used in non-stop trans-Atlantic operation by American Export Airlines, have been revealed.

It has been stated that the plane, fully equipped and with a crew of 11, will transport a pay load of 5,000 lbs. at a speed of 150 mph. at 10,000 ft. a distance of 3,800 miles, having 400 gallons of fuel to spare at the end of the voyage. The ship's top speed, together with other performance data, has not been revealed.

If operated non-stop between New York and Biscarrosse, France, the S44, with a 14-mph. tail wind, is said to be able to carry a payload of over 7,000 lbs. With a 14-mph. head wind, the payload would be 4,300 lbs. The plane's empty weight is 30,200 lbs., fully equipped, ready for service. Two gross weights have been guaranteed: normal of 50,000 lbs., and provisional of 57,500 (the latter is to take-off but not to land until fuel is used or dumped).

The S44 is said to be substantially the same as the Navy model except that the motors in the commercial ship have a higher horsepower rating, by 150 hp., at take-off than the Navy's. Fuel capacity is 3,900 gals. According to Igor Sikorsky, designer, the S44 can be landed at a gross weight of 50,000 lbs. in a 5-6 ft. sea. The Navy is said to have landed the ship in very rough open water and then taxied it over 100 miles.

Mr. Sikorsky also has stated that the original Navy requirements were very high, but added that the ship showed nine mph. faster maximum speed than required, "several hundred" feet greater ceiling, "several

Suitable for long distance non-stop operation is the Vought-Sikorsky S44 illustrated in these three drawings. Bottom drawings show how American Export Airlines will accommodate 12 passengers in three compartments, each of which seats four persons.

Performance details of the S44 have not been revealed.

"hundred" lbs. less weight, and 15 seconds faster take-off. Fuel consumption is .44 lbs. per hp.-hr., and normal wing loading is 30 lbs. per sq. ft.

In converting the boat for commercial use, a 10% reduction in parasite resistance is realized by elimination of machine guns, bombs, and other armaments, while 2½% parasite resistance is added through use of de-icers, making a difference of minus 7½%. This difference is not taken into consideration in the performance data above.

American Export Airlines plans to furnish commodious accommodations for 12 passengers, who will be carried in three compartments, each of which seats four persons. Each of the passengers will have an individual seat and an individual window. A fourth compartment, in the rear of the other three, will serve as a lounge. For night travel, four berths are made up in each compartment, except the lounge. Resting places for the crew are provided in the extreme front and extreme rear of the boat.

"I believe that the S44 is particularly suitable for long distance non-stop operation," Mr. Sikorsky said while testifying at American Export's CAA hearing, now in session. "This is what the ship had originally been



The first all-metal airplane built by the Fokker Company in Amsterdam is this T.9 twin-engine bomber for the Dutch East Indian Air Force. The craft is powered by two Bristol Hercules twin-row sleeve valve engines of 1,375 hp. each. Performance figures have not been announced.

studied for . . . A non-stop operation over the ocean has considerable advantages and must be the final way of operating . . . In every respect, a non-stop operation . . . is most practical and most efficient. I am confident that the airplane (S44) is fully capable of being used safely . . . with the speed and characteristics I have mentioned. I personally do not know of any other ship capable of duplicating this service."

Schall Distributes Luscombes

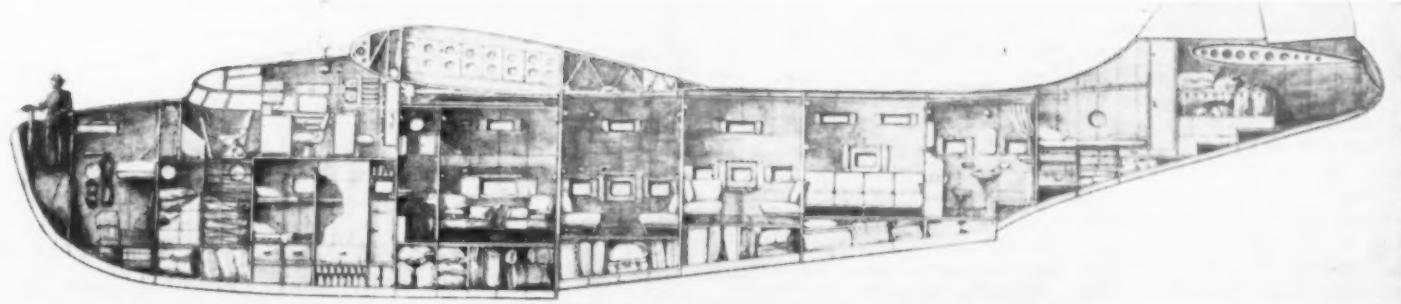
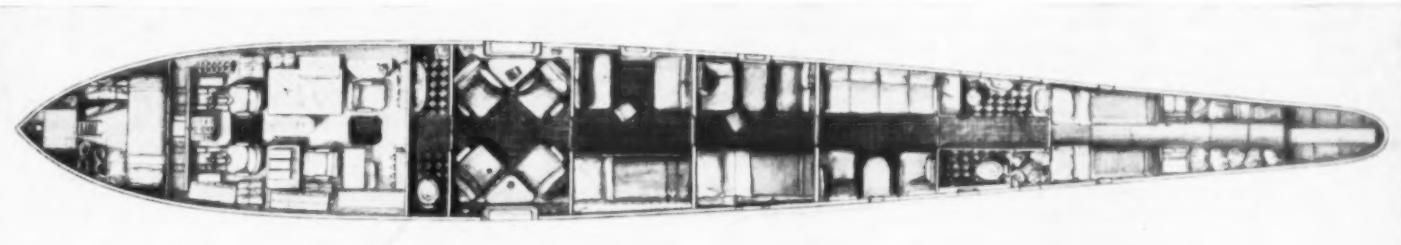
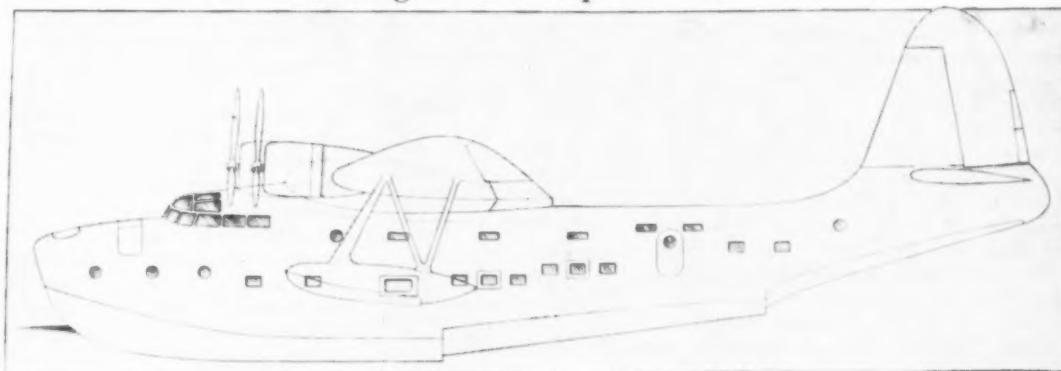
T. D. Schall, Jr., operator of Doug Schall Aircraft Sales, Washington, D. C., is a new distributor for Luscombe airplanes in his vicinity.

Rickenbacker's Survey

Ten per cent, or 110, of Eastern Air Lines' entire male personnel is enrolled in organized U. S. military reserves, according to Capt. E. V. Rickenbacker, president and general manager of the company.

Approximately 45% of all EAL captains and pilots hold reserve commissions in the Army Air Corps, Navy, Marine Corps, National Guard or Infantry. One of the company's "million-miler" captains has been in the Army Air Corps Reserve since the World War. Another has been in that branch for 20 years.

Drawings of the Proposed S44



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The Civil Aeronautics Authority, on the other hand, has one of the most difficult tasks ever handed an agency by Congress.

At the New Orleans convention of the state aviation officials Mr. Ben E. Cole, of Airlines Charter Service, discussed the difficulties of drawing up a set formula for new routes. "Such formulae tell us what has happened, not what is to happen in the future," he said. "Railroads were run out into the plains of the central states when there wasn't a citizen to five miles of track. Their existence brought in the people, built the central states as we know them today. No formula based upon population, postal receipts, and trading center areas indicated a need for those railroads. Foresight did, and certainly the results have justified that foresight."

Motor freight trucks are making possible the decentralization of industry. Air transportation, including feeder lines, can supplement this flexible transportation network for passengers and mail, not merely supplement the fixed trade routes built up by the railroads. Even the airplane alone can do the job of developing new trade routes, as has been demonstrated in Canada, Alaska and Central America. The airplane can be the means of developing new areas or of reviving areas which have been poorly served by surface transportation.

Thus it is that the Civil Aeronautics Authority can only use a formula of population, travel and postal receipts as one of many guides in deciding upon new routes of the air. For, as Mr. Cole so aptly pointed out, such a formula only tells what has been happening and such a formula is only valid if America's trade routes are to remain static and if the airplane is only to offer merely another form of transportation between the same trade centers. As Mr. Cole has also pointed out, *foresight* is about the only "formula" that can adequately be used. Let the airplane aid in decentralization of industry, in opening new trade areas, of reviving areas where existing transportation is meager. The westward expansion ended with the building of the great cities on the Pacific Coast, but a great internal expansion awaits by use of the greatest and most unrestricted method of travel the world has ever known.

Fortnightly Review

(Continued from page 1)

of those days. A railroad into the unpopulated undeveloped west? Uneconomical, unsound, fantastic! A wasteful burden to the taxpayers! And yet the railroads built, developed and populated the west.

Transportation is a queer, flexible and strangely unscientific factor in the lives of human beings. It is one thing to estimate the traffic potentialities between two cities which already have an existing mutual trade flow. It is quite another to project the traffic possibilities where there are no existing trade relationships. Transportation, it must be remembered, is a means both of maintaining and opening trade routes.

Thus it is that in the year 1939 the Civil Aeronautics Authority is faced with a very heavy responsibility in authorizing new airline routes. Just what formula can be drawn up to determine the public need and the economic justification for a new route? A line between New York and Chicago is obviously sound; existing surface travel, postal receipts and other tangible factors would prove it so. But does that mean that because existing travel and postal receipts between two other points are low that an air route is not justified? Is the airplane to be chiefly a means of supplementing existing routes of surface transportation, or is the unlimited skyway a God-given charter for countless new trade routes not possible or dreamed of when only surface travel was available?

The railroads were subject to terrain. They were built around mountains, they followed valleys and the courses of rivers and lakes. Along the railroads were built the new cities west of the Alleghenies. Detroit, Chicago, Cincinnati, St. Louis and Omaha grew because of surface transportation, and this transportation was guided largely by the natural resources and the natural barriers and waterways. This was the picture of America's trade routes up to World War I when the railroads reached their peak in mileage. With only one mode of transportation available, the nation's trade routes became more or less "fixed." They were static until the next stage of transportation arrived.

That next stage was the highway. After the war came the start of an enormous and exceedingly flexible motor truck network. At first the motor trucks supplemented existing railroad services at lower costs, but industry found that it was no longer necessary to have manufacturing plants adjacent to trunk line railroads. Decentralization began because motor truck transportation for freight was much more flexible than rail. Products could be transported to small communities off the railroad lines, into suburbs, or cutting across wide expanses in shorter time and mileage than the railroads. The highway, not so restricted by terrain as the railroads had been, provided a flexibility of transportation which tended to upset the static trade routes developed by the ribbons of steel. Just as the railroads opened up new trade areas, so did the highway open up a multitude of new channels of trade.

And now we have air transportation for the fast and expeditious movement of passengers, mail and express. Scarcely more than a decade after the beginning of commercial air transport we have a Federal agency whose approval must be sought and obtained for every new air route. This is as it should be, for the airplane operates four times as fast as the railroad train and the only surface facilities are primarily those at terminals. The airline network must be constructed carefully and orderly.

A New Deal for Announcers

Some of the airlines are disturbed, rightfully we think, over the tendency of announcers at air meets and airport dedications, to stress in hysterical and shaky voices the antics of aerial acrobatic performers which are seemingly dangerous but actually are just routine acrobatic flying. At a recent airport dedication attended by upwards of 50,000 persons several airlines contributed transport ships to add to the color of the show. But whatever educational benefits would have accrued by letting the public get a glimpse of large airliners, was nullified by an announcer who spent most of his time dramatizing the "perils" of the air. Harmless acrobatics were described as terrifying, death-defying maneuvers, with a crash just in the offing. Such stuff, we think, should be relegated to the ash can. There is room for good announcers who don't have to terrify an audience and who can contribute something educationally to the public interested in aviation. We understand some of the transport companies are planning to refuse to participate in any more such events unless the announcing business is under control.

Aviation and the Fair

Now that the New York World's Fair has closed for the winter some pertinent observations are in order. The aviation industry has every reason to be proud of the aviation building and the attendance it attracted from the time of its late opening to the close Oct. 31. Beset by lack of wholehearted support from the industry, delayed by financing and labor troubles, the aviation exhibit opened at all only because of the heroic work of such men as Jim Webb (Sperry), Stick Randall (TWA), H. E. Lawrence (Curtiss-Wright), Al Lodwick and Stan Hedberg (Aviation Mfg. Corp.) and others of like caliber who refused to be defeated in the face of heavy obstacles. Once the building was opened the public came in droves. The fact that 2,000,000 persons viewed the mock-up of the Curtiss-Wright transport CW-20 during the first 106 days is sufficient evidence of the public interest. There is no question but that the aviation exhibit was one of the finest educational projects ever undertaken and it is to be regretted that there was not 100% cooperation by the entire industry—manufacturing and airlines—from the very start. Questions and comments from those who filed past the CW-20 indicated that the general public still has little conception of travel by air. Next year the airlines plan to operate a joint sightseeing service from North Beach and the combination of the exhibit and the educational flights should do much to bring an understanding of air transportation to the level of the general public.

As for the World's Fair itself, there is much to be said for the many

Aero Bookshelf

INTERAVIA A.B.C. *The International Directory of Aviation. 3d Edition. 1,400 pp.; 200 pp. of maps; \$7.50.*

The third monumental international directory published by Interavia, Geneva, Switzerland, is now at hand. It is for the year 1939, with revisions completed up to June 30, 1939.

The publication is unique and serves an admirable purpose despite the difficulties of supplying last-minute changes to keep it up to date. It is particularly valuable for providing the organizations of ministries and other official bodies of the countries of the world. The sections on commercial air transport services, while not too accurate, are helpful.

There are four main sections, an alphabetical index, an analytical index, annex and atlas. Flying operations, flying schools; aircraft, aircraft engine and accessory companies; flying and other aeronautical organizations, and commercial aviation companies all are listed. Not too many errors have been noted in a cursory study of the directory to destroy its usefulness.

Copies may be obtained from Interavia, at Geneva, or from the U. S.

fine buildings. It was the largest and finest fair of its kind ever held, but the management has only itself to thank for a disappointing attendance. An exorbitant general admission fee was the initial handicap while press relations were sadly bungled, resulting in a bad press throughout the country. Lighting effects were far inferior to the beautiful and moving displays at the San Francisco fair. The New York show was lacking in not only color but in music. Only a few loudspeakers were in evidence. Most absurd feature was the lack of food stands where small income families could have a nickel glass of milk and a dime sandwich and other wholesome food items. Having paid a high admission fee the small income groups had to pay high restaurant prices or exist on hot dogs and a well known thirst-cooler soft drink—a fine tribute to the World of Tomorrow. For several months there weren't even stands where a dime glass of milk could be obtained. Another bungle was the masterpieces of art building where, after a fifty cent admission charge was paid, the visitor was confronted with famous art works with only numbers for identification. The guide book was \$1.00, no less. Appreciation of art cannot be accomplished for the masses at \$1.50 per head! Added to this was the most confusing, botched up system of intra-fair transportation ever devised by man. We hope that 1940 sees a more intelligent and enlightened management, a management much smarter in showmanship and appreciation of U. S. family income levels.

representative at 1743 N. Courtney Ave., Hollywood, Cal.

TRANSPORT CONTROL ABROAD, by W. Rodney Long, Transportation Division, Bureau of Foreign and Domestic Commerce, U. S. Dept. of Commerce. Trade Promotion Series. No. 196. For Sale by Supt. of Documents, Washington, D. C., 40c. 228 pp.

The Department of Commerce has gathered together a wealth of information on transportation control in foreign countries which may be of interest to those in aviation who specialize in general transportation problems. Air transportation is relegated to such a minimum of consideration that it is only with some study that one finds even a mention of travel by air. But there is much useful and detailed information on highways, railroads and waterways, and how various countries have established control and regulation. There is also considerable information on coordination or regulation of transport services and one finds as many methods of control as there are countries. Where airlines are considered adjuncts of national defense or where they are subsidized as state properties, the volume provides little information, but where airlines are brought under joint control with railroads, highways and waterways, some attention is given.

Longfellow in U. S.

H. B. Longfellow, European representative for United Air Lines with headquarters in London, England, is in this country currently but expects to return to England within a few weeks. Longfellow sailed from Southampton the day Germany invaded Poland. He believes the war will result in additional airline business in this country because of purchases made here and reports that food supplies appear to be adequate in England.

Obituary

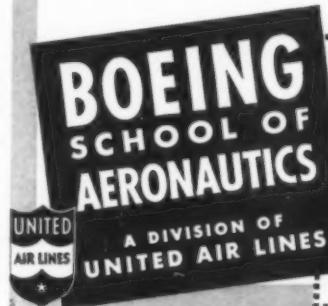
CONYERS B. GRAHAM, 52, charter member of the Aero Club of Pennsylvania and an amateur balloonist who established a recognized altitude record for balloons in this country, died on Nov. 1 in Philadelphia following an illness of six years. The altitude record was established at the International races in Indianapolis in 1916.

MAX KLEIN, veteran member of American Airline's sales staff in southern California, died Oct. 22 in Los Angeles after a long illness. Klein joined American on Oct. 10, 1932, as a ticket agent and had been with the organization since that time.

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THE C.A.A. RECORD

(Applications, Hearings, Dockets)

American Asks Bridgeport Stop
 American Airlines has filed application with the CAA for amendment to its AM18 certificate, Newark-Boston, to include a stop at Bridgeport, Conn. The application points out that AA now flies over Bridgeport. The city is now engaged, with assistance of WPA, in improving its airport, and AA does not plan to inaugurate service until such improvements are completed. However, if the lighting project is delayed beyond the remainder of the improvement program, "daylight service may be inaugurated prior to completion of the lighting project, and in case one of the three proposed runways has not been completed, petitioner may inaugurate service upon the completion of two of the three runways, provided said two runways are at least 3,500 ft. in length, the inauguration of such service, however, to be subject to the appropriate amendment to petitioner's Letters of Competency."

United-Western Air Trial Examiner Appointed

Roscoe Pound has been appointed special trial examiner in the Jan. 3 hearing on the application of United Air Lines for approval of acquisition of Western Air Express. Complete story on this page.

Pan Am Carriers Seek Certificates

Hearings were held on applications of Panama Airways Inc. and Pan-American Grace Airways Inc., Oct. 24 and Oct. 26 respectively, for grandfather certificates covering operations in Central and South America. Complete story on page 21.

4 Airlines Ask Southeast Routes

Hearing opened Oct. 26 on applications of Delta, Penn-Central, Southern and Dixie Airlines, for various routes in the southeast. Eastern Air Lines, seeking Birmingham as a stop on AM5 (Newark-New Orleans), also put in appearance. Complete story on page 20.

North Beach and Newark Named Co-Terminals

The CAA on Nov. 7 issued an opinion naming North Beach Airport and Newark co-terminals to serve the New York metropolitan area. Complete story on page 10.

American Export Hearing Opens

In session at this writing was the American Export Airlines' hearing for trans-Atlantic routes to England and France. Pan American Airways is present as intervenor. Complete story on page 19.

American to Ask New Routes

American Airlines has indicated its intention to file applications for mail-passenger-express routes between Cincinnati and Wilkes-Barre and Scranton (such points to be served by a joint airport) via the intermediate point of Pittsburgh, Pa., and between Cincinnati and Philadelphia.

United Asks Camden Mail

United Air Lines on Nov. 1 filed application with the CAA seeking authorization to transport mail to and from Camden, N. J. (serving Philadelphia) on AM1. The Postmaster General also has requested the service.

Fayetteville to Intervene

The city of Fayetteville, Ark., has been granted permission to intervene in the Braniff-Kansas City Southern-Mid-Continent hearing scheduled for Jan. 22. The CAA denied a similar petition from Poteau, Okla. Hearing covers Braniff's Wichita-New Orleans application and Kansas City Southern's and MCA's Kansas City-New Orleans.

CAA Investigates Express Contracts

The CAA announced Nov. 1 that it is instituting a general investigation to determine whether the contracts between Railway Express and all the airlines are adverse to the public interest. Complete story on this page.

Cohu Directorate Hearing

Hearing was held Oct. 26 on the application of LaMotte T. Cohu for CAA approval of his serving as a director of TWA, chairman of the board of directors of newly-formed Northrop Aircraft, and as president and director of Air Investors. Cohu told CAA Examiner C. Edward Leasure that Northrop does not own any TWA stock and contemplates only production of military aircraft. There have been no business transactions between TWA and Northrop or TWA and Air Investors, he said. Cohu, who has been on TWA's board since 1934, added that Northrop has no objection to his continuing in that capacity.

On the latter company's 200,000 issued shares (400,000 authorized), the witness said he owns 4,999 Class A and 7,499 Class B. He explained that the stock actually has not been issued but is still in the hands of the transfer agent. If Air Investors were contemplating buying or selling TWA stock, Cohu said, because of his affiliation with the airline, he would make no recommendations as an officer of the former company.

Also testifying in favor of the interlocking directorates were Graham Grosvenor, vice-president of Air Investors, and Paul Richter, TWA's executive vice-president. No briefs are to be filed in the case. Gerald B. Brophy appeared as counsel for TWA, and Hubert Schneider for the CAA.

Calendar of Hearings

Nov. 20—Eastern Air Lines, new routes serving Nashville-St. Louis and Muscle Shoals-Nashville.

Nov. 27—Uraba, Medellin & Central Airways, "grandfather" case.

Dec. 6—Braniff Airways, American Airlines, on application of Braniff for review of certain actions of Postmaster General and its complaint "against certain unfair practices and methods of competition by American."

Dec. 11—Pennsylvania-Central Airlines, new routes between Knoxville and Norfolk.

Jan. 3—United Air Lines, Western Air Express, on UAL's application for approval of "proposed acquisition of control of, and merger with or purchase of all the assets of WAE."

Jan. 8—Eastern Air Lines, Braniff Airways, new route serving Memphis-Kansas City.

Jan. 17—Eastern Air Lines, American Airlines, on Eastern's application for review of certain actions of Postmaster General and its complaint "against certain unfair practices and methods of competition by American."

Jan. 22—Braniff Airways, Kansas City Southern Airlines, Mid-Continent Airlines, on Braniff's Wichita-New Orleans application, and KCSA and MCA Kansas City-New Orleans.

To TCA Publicity Job

J. H. Fountain of St. Albans, Vt., has been appointed publicity representative of eastern U. S. for Trans-Canada Air Lines and Canadian National Railways with headquarters in New York. Announcement was made by Walter Thompson, director of publicity, Canadian National Railways and affiliated companies.

Olson With Dixie

Allan W. Olson, formerly of Northwest Airlines, has been appointed operations manager of Dixie Airlines. Terrell Drinkwater, airline attorney and member of the Colorado Aeronautics Commission, has stated that he is not representing Dixie in a legal capacity. His only work for the company was preparation of new route applications.

CAA to Investigate Express Contracts

Institution of a general investigation to determine whether the contracts between Railway Express Agency and all the airlines are adverse to the public interest was announced on Nov. 1 by the CAA.

Companies affected by the order are: American, Boston-Maine, Braniff, Chicago & Southern, Continental, Delta, Eastern, Mid-continent, Northwest, Penn-Central, Canadian Colonial, Capital Airlines, Central Vermont Airways, Columbia Airlines, Inland, Miami-Key West Airways, National, Pan American, TWA, United, Watertown Airways and Western Air Express.

Reasons why the Authority intends to investigate the contracts seem to be: (1) dissatisfaction expressed by some airlines concerning the contracts, and (2) the CAA's wish to move cautiously in such matters because approval of the contracts means the parties are exempt from the provisions of the antitrust laws. Although it has not been announced, hearings may be held at a later date.

Columbia Airlines is listed as operating from Bloomsburg, Pa., Capital from Pierre, S. D., Miami-Key West from Miami, and Watertown from Watertown, S. D.



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Continental offers a scenic sun route to Denver and Colorado—from either Eastern cities or the West Coast. Continental's trans-continental connections are now better than ever—through El Paso, Texas; Albuquerque, New Mexico; Wichita, Kansas; and Denver, Colorado.

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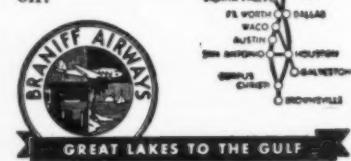
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Thus, the new wealth of science is adding millions to the fabulous "big three" that had already built an empire—cattle, cotton and oil!



GREAT LAKES TO THE GULF

XUM

American Export-Pan Am. Fight Opens; Route to Rome Sought

One of the most important and significant hearings held to date was in session at this writing before CAA Examiner C. Edward Leasure on the applications of American Export Airlines for mail-passenger-express routes between New York and Southampton via Foynes, and New York to Marselles via Biscarrosse. Pan American Airways is present as intervenor.

With passage of the Neutrality Act and designation of combat zones on Nov. 4, six days after the hearing opened, Export on Nov. 7 also filed applications for temporary certificates between New York and Rome via Lisbon and Barcelona, and New York-Rome via Horta, Lisbon and Barcelona.

Gerald B. Brophy, Export attorney, made it clear that the company still wants its routes to England and France and that the temporary routes to Rome were in addition to and not in place of the former. Although these latter routes would remain in effect only until the end of the war, Export is not in any way waiving its right to serve permanently Portugal, Spain and Italy.

First week of the hearing saw both Export and Pan Am threaten to resort to use of subpoenas to obtain information. On the first day, Brophy stated that he would want testimony from C. V. Whitney, chairman of PAA board; Juan Trippe, president, and J. S. Woodbridge, treasurer. He also requested a complete list of all mail payments received by PAA, pound-miles, pounds carried, and other specific data on the intervenor's operations. If these witnesses and this information are not produced, Brophy stated that he will subpoena them. Henry J. Friendly, PAA attorney, objected to furnishing information on anything but the Atlantic.

During testimony given by Igor Sikorsky, designer of the Sikorsky S44s which Export intends to use in its non-stop operation, Friendly attempted to subpoena information about that plane which was either a manufacturer's trade secret or Navy information. Examiner Leasure refused to issue the subpoena.

To date, four witnesses have been presented by Export: W. H. Coverdale, president and director of both the airline and American Export Lines, the steamship company; John Slater, executive vice-president of both com-

panies, Dr. Hurd C. Willett, associate professor of meteorology at Massachusetts Institute of Technology, and Mr. Sikorsky.

Coverdale testified that the steamship company has been subject to intensive foreign flagship competition on its route to the Mediterranean, and needed either larger ships or an airline to maintain its business. The cost of large ships would be "prohibitive," he said. Export then contacted the U.S. Maritime Commission, explained its airline plans, and received approval, Coverdale added.

Slater told Examiner Leasure that Export's bankers, Lehman Brothers, have assured the company that necessary funds to operate the airline can be raised when a certificate is granted and mail pay set. Additional capital of \$3,350,000 will be needed, he said, of which \$2,408,460 will be for aircraft and other equipment, and the remainder for working capital, inventories, etc.

Reason for amending the company's application to include mail-passenger-express service to England as well as to France was given by Slater as "seeing a potential market and the possibility of serving it." He explained this by stating that a large amount of mail-passenger business was going to northern points, and also that there did not seem to be any immediate possibility of extending a French line to any further point. Following the Pan Am certificate and rate decision, which left some landing rights open, Export decided to apply for such rights, Slater stated. Amendment to carry passengers was occasioned by Vought-Sikorsky's interest in constructing and selling the S44s at a price making such purchase "economically justified," he added.

Dr. Willett, who had charge of Export's meteorological set-up during the experimental flights, expressed the opinion that the company's arrangements in that field will be adequate.

Stanley to Sell Voughts

Robert Stanley, new Vought-Sikorsky test pilot, will demonstrate Vought planes in South America as a flying salesman for Vought-Sikorsky Aircraft Div. of United Aircraft Corp., Stratford, Conn.

Radio Operators and American Sign

The third consecutive agreement between Air Line Communications Employees Association and American Airlines was signed recently in Chicago. Seated, left to right, are Otto H. Schmidt, president of the association, and C. R. Smith, president of the airline. Standing, Robert E. Blanton, secretary-treasurer of the association and D. W. Rentzel, AA's a.s.t. communications supt.

This year's contract netted gains for American's radio personnel in excess of \$11,000 for the life of the contract which renews itself from year to year unless amended by either party to the contract.



50-75% of Pilots Work Under ALPA Contracts; Co-Pilots Get Breaks

Between 50% and 75% of all airline pilots are now working under agreements with the Air Line Pilots Association, according to that organization, which also reveals that contracts have been signed with three companies.

The agreements under which some of the 50-75% are working are unwritten, but the provisions are in effect and formal contracts will be signed shortly, it is explained.

Better pay for co-pilots was the primary purpose of the ALPA in the contracts which have been signed—American Airlines, TWA and Braniff. In these agreements, the second officers are receiving salaries as follows: first six months, \$190; second six months, \$210; third, \$230; fourth, \$250; fifth, \$270; sixth, \$290; seventh, \$310; eighth, \$330, and \$350 per mo. thereafter. Under the Labor Board scale, which sets up minimums, co-pilots received \$225 per mo. However, many companies were paying in excess of this amount.

Co-pilots receiving higher salaries than those above at the time the contracts were signed cannot be lowered, according to another section of the agreements. Seniority also is straightened out for the first time, it was said.

The ALPA in the near future expects to sign contracts with United Air Lines, Penn-Central and Pan American-Grace Airways.

American Airlines' Ads Win National Award

American Airlines has won the Socrates' high award for its newspaper advertising, adjudged the best among that of leading national advertisers during the last 12 months, National Ad-views has announced.

Reasons offered by the judges giving the award to American include excellence in performing a highly specialized job, versatility in appealing to a nationwide market and constant varying of advertising appeals to meet the diverse interests of the public. The company's advertising also was commended as an important factor in enlisting public friendship for the air transport industry. Charles A. Rheinstrom, vice-president in charge of sales, is director of American's advertising.

TWA Installing Five Powerful Transmitters

Immediate installation of five more 2,500-watt radio transmitters, nearly seven times as powerful as previous standard airline equipment, has been authorized by TWA to supplement four now being completed in key cities along the coast-to-coast route.

Jack Frye, president, said the transmitters will be installed at Los Angeles, Boulder City, Nev., Amarillo, Tex., Columbus, O., and Philadelphia.

They will supplement new equipment at Albuquerque, Pittsburgh, Newark and Chicago. The Albuquerque transmitter already is in use and the others are expected to be erected in a short time.

Transmitters were manufactured according to TWA specifications by the Siebenthaler Div. of Aircraft Accessories Corp.

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ATA MEETING

Airline Heads Confer With CAA on Winter Flying

The Air Transport Association held its annual meeting in New York City Oct. 13-15 with one day devoted to inspecting the World's Fair and New York's new airport, and another day to conferring with the Civil Aeronautics Authority and the Air Safety Board on winter flying.

Col. Edgar S. Gorrell, ATA president, presided at the first day's sessions. A committee on airline safety conferred with the CAA following the New York meetings, the committee being composed of Major R. W. Schroeder, vice-president of United Air Lines, chairman; Gage Mace, assistant operations manager of American Airlines; George Gardner, vice-president of Northwest Airlines; J. H. Carmichael, chief pilot of Pennsylvania-Central Airlines; and J. G. Fritz, vice-president in charge of operations for TWA.

Among the speakers from the CAA were Robert H. Hinckley, chairman; Harilee Branch, vice-chairman; Grant Mason, Oswald Ryan and Edward P. Warner, members; Clinton M. Hester, administrator, and Thomas O. Hardin, chairman of the Air Safety Board. Other speakers included Commander F. W. Reichelderfer, chief of the U. S. Weather Bureau, and Dr. George W. Lewis, director of research for the National Advisory Committee for Aeronautics.

Col. Edgar S. Gorrell was reelected president and Fowler Barker was reelected secretary and treasurer of the Air Transport Association at the New York meeting. Thomas F. Ryan 3d, executive vice-president of Mid-Continent Airlines, was elected ATA vice-president, succeeding Croil Hunter, president of Northwest Airlines.

ATA Discloses Annual Awards for Research

Cash awards to pilots, dispatchers and meteorologists of airlines of the U. S. for the best original research having practical application to aeronautical meteorology and aircraft dispatching, will be made annually by the Air Transport Association, according to Col. Edgar S. Gorrell, ATA president.

The first of the awards will be available on Sept. 1, 1940, with the first prize \$250, the second \$150 and the third \$100. If the award committee decides that no worthy research is produced by July 1, 1940, the \$500 annual prize money will accrue to be added to a like amount available for the next year.

Details concerning the papers may be obtained from the Air Transport Association, 135 S. LaSalle St., Chicago.

In addition to the awards, an ATA fellowship for persons eligible for graduate work in meteorology, open to airline employees as well as students in meteorology, will be announced at an early date.

United Expands Territory

United Air Lines' Omaha traffic office has been expanded to include jurisdiction over Iowa, with the enlarged territory in charge of C. M. Sharar, who has been Omaha d.t.m. for a number of years. Harold Crary, United's vice-president-traffic, in making the announcement said the line will continue to maintain its traffic office in Des Moines with E. B. Butler as district representative.

Airlines Roll Up Greatest Safety Record in History of All Travel

From three sources during the past two weeks came encouraging reports of the safety record being rolled up by the domestic airlines of the U. S.

At the annual meeting of the Air Transport Association in New York City Oct. 15, Robert H. Hinckley, chairman of the Civil Aeronautics Authority, hailed the seven months' record of the airlines which flew 500,000,000 miles without a single accident resulting in a fatality.

At the same meeting Col. Edgar S. Gorrell, president of the ATA, received a letter from John Stilwell, president of the National Safety Council, congratulating the airlines "on the best safety record ever established in the history of aviation."

Mr. Stilwell said passenger miles flown per passenger fatality has in-

creased 340% for the first nine months of 1939 as compared with the three-year average, 1936-38, and added that "from all records available it seems safe to say that this is the greatest increase in safety of travel of any class of passenger service for any similar period in the history of transportation in the United States."

On Nov. 3 President Roosevelt read at his regular press conference a memorandum from Chairman Hinckley to the effect that airlines in the U. S. flew 500,000,000 passenger miles without a fatality or serious injury during the preceding seven months and seven days. The President praised the airlines, pointing out that the next highest such record was only 210,000,000 passenger miles per fatality.

Four Airlines vie for New Routes In Southeast; Sharp Struggle Looms

What promises to be a long and sharply contested struggle of air carriers for new routes opened Oct. 26 in Washington when the applications of Delta, Pennsylvania-Central, Southern and Dixie airlines for various routes in the southeast were brought to public hearing before CAA Examiners Francis A. Brown and Thomas Wrenn. Also represented was Eastern Air Lines, which has asked to have Birmingham included as a stop on AM5 (Newark-New Orleans), but testimony on that particular request is not being received at this time.

The routes being sought by each airline, including the intermediate stops, follow:

Delta Air Lines: Cincinnati to Atlanta, via Knoxville and Lexington; Cincinnati to New Orleans, via Lexington, Knoxville, Chattanooga, Birmingham and Meridian; Atlanta to Brunswick, Ga., via Augusta and Savannah;

Pennsylvania-Central Airlines: Pittsburgh to Birmingham, via Charleston, Knoxville, and Chattanooga; Knoxville to Brunswick, Ga., via Atlanta and Savannah;

Dixie Airlines: Atlanta to Pittsburgh, via Knoxville, Charleston and Wheeling; Birmingham to Knoxville, via Chattanooga;

Southern Airlines: Atlanta to Memphis, via Birmingham; Atlanta to Savannah; Atlanta to Pensacola, via Columbia and Dothan, Ala.; Atlanta to Cincinnati, via Knoxville and Lexington.

Testimony from a parade of Congressmen, mayors, and city witnesses, each one seeking better air service for his community, was the order of business for the first three days, but on Oct. 30 Delta began direct presentation of its case, with Edward M. Johnson, expert of advertising and research for Traffic Service Corp., Chicago, introducing exhibits aiming to show the traffic potentialities of the southeast area and the commercial and industrial importance of the cities along the proposed routes.

An order for purchase by Delta of five used Douglas DC-2 aircraft at about \$35,000 each from American Airlines was disclosed by Patrick L. Higgins, Delta operations manager.

The planes are powered by used Wright Cyclone GR-F3A engines and will be depreciated on a two-year basis, Higgins revealed.

According to Higgins, 10 planes would be needed for actual operation of the company's Charleston to Ft. Worth service with the proposed Cincinnati-New Orleans, Atlanta-Cincinnati, and Atlanta-Brunswick routes, and with approval of the present application the DC-2 craft will be operated jointly with Delta's five Lockheed Electras, except for the

segment east of Atlanta which is planned for service entirely by Electras during the first year.

Commenting on the Delta-American deal, C. E. Woolman, Delta vice-president and general manager, declared that his company will pay cash on delivery of the Douglas ships, which is scheduled to start in January. Four of the planes, he said, probably will be taken over by early February, their release to Delta depending somewhat upon the delivery of DC-3s ordered by American. All the funds necessary for capital expenditures are available to Delta from Central Saving Bank & Trust Co. and Ouachita National Bank, both of Monroe, La., Woolman testified, admitting however that details of the loan have not been worked out. Woolman described the ordered Douglas ships as being approximately three-and-one-half years old with 8,000-9,000 hours of flight, and he expressed conviction that no comparable equipment is now available elsewhere at a lower price.

Net profit of \$32,132 for the first year on combined operations of the new routes is estimated in a company exhibit offered by Leigh C. Parker, Delta general traffic manager. Total revenues are estimated at \$584,663 and total expenses at \$532,531, revenue breakdown showing passenger \$226,005, express \$4,849, excess baggage \$2,260 and mail \$351,549. Mail revenue is based on the present pay rate of 29¢ per scheduled mile flown received on Delta's AM24. A company exhibit prepared by L. B. Judd, Delta chief accountant, estimated the total operating cost per revenue mile at 45.58¢, compared with the actual figure of 44.52¢ for operations during the past fiscal year.

Throughout, Delta's witnesses were cross-examined closely by E. Smythe Gambrill, Eastern Air Lines counsel, who charged that Delta's proposed routes would seriously divert Eastern's traffic, since they could be operated with American Airlines' routes for long-haul service to Chicago and New York. These charges were denied by Delta, Parker, the general traffic manager, insisting that connecting service is of secondary importance to his company, principal aim being to provide needed inter-city air service in the southeast.

At time of writing, Penn-Central had just opened its direct case, and with continued extensive cross-examination of each witness, indications point toward continuance of the hearing through mid-November.

The airlines' counsels are: Delta, Ernest Moore, Seth Richardson and Miss Eleanor Faulk; Penn-Central, Fred Ballard, Franklyn Lulington, Henry James and Abbott Mills; Dixie, William I. Denning and W. S. T. Hurlock, Jr.; Southern, Thomas Scott; and Eastern, John Lorch and E. Smythe Gambrill. Counsel for the CAA is Hubert A. Schneider.

PMG Asks Additional Braniff Mail Service

The Postmaster General on Oct. 26 requested the CAA to permit the carriage of mail on Braniff Airways' passenger-property route between Houston-San Antonio and Houston-Corpus Christi. Braniff previously had filed application seeking such permission (AMERICAN AVIATION, Nov. 1).

The Post Office's request is in line with the general policy of using existing services for the carriage of mail. Only unusual feature is that the above-mentioned points are served by Eastern Air Lines' AM42 and placing of mail on Braniff would create duplicate service.

To date the Postmaster General has requested that mail be placed on Penn-Central between Buffalo and Pittsburgh, on TWA between Kansas City-Chicago-Pittsburgh and Kansas City-Chicago-Newark, Pan American Airways San Francisco-New Zealand, on United into Camden, N. J. on AM1 and on Braniff.

Inland Inaugurates Training Program

Inauguration of a pilot and dispatcher training program and revision of certain operating procedures has been announced by Inland Air Lines.

Two weeks ago, Inland took delivery on a Link Trainer, which is now in operation at Cheyenne under the direction of T. H. Collins, Jr., who recently completed a course at the Link factory. The company also plans progressively to replace its propellers, changing from Hamilton Standard constant speed to Hamilton Standard hydromatic.

Doc Eefsen, chief pilot for United Air Lines at Portland, has been temporarily named chief pilot in charge of Inland's pilot training program. A. W. Stephenson, of Western Air Express, is temporary operations manager.

Al Carvell, formerly in charge of United's overhaul and maintenance hangar at Cheyenne, has been employed by Inland as maintenance superintendent.

Personnel shifts include moving G. M. Guenin, station manager at Rapid City, to the centralized dispatch office in Cheyenne; moving Earl Davis from Huron to Cheyenne as dispatcher, and moving G. B. Van Wagenen, Billings station manager and dispatcher, to Cheyenne as chief dispatcher.

United Crew Sets DC-3 Altitude Mark

A new world's altitude record for Douglas DC-3 transports was established in Chicago recently when a plane piloted by Capt. W. E. Larned, assistant superintendent of flying for United Air Lines' eastern division, and First Officer D. Luckman climbed to 28,900 feet while Dr. Gerhardt Herzog and Winston Bostick, research associates at the University of Chicago, photographed mesotrons, the heavy radioactive components of cosmic rays. Accompanying the scientists was W. W. Davies, United research engineer.

Capt. Larned, who disclaimed all thought of trying to surpass the previous record of 26,300 feet for DC-3 aircraft, said the ship's engines worked perfectly during the three and one-half hours aloft and indicated that he could have continued to more than 30,000 feet. The plane was powered by 14-cylinder, twin-row, Pratt and Whitney "C-3" engines equipped with the new injection carburetor, while the former record was made in a craft powered by Wright Cyclones.

2 Pan American Carriers Are Heard On Grandfather Era Applications

Two Pan American grandfather certificate applications were given brief hearing in late October before CAA Examiner Frank A. Law, Jr., with authorization being sought for existing routes through Central and South America.

Continued from June 8, hearing was resumed and concluded Oct. 24 on request of Panama Airways Inc. for authorization of nonscheduled passenger and property service from Cristobal at the northwest end of the Panama Canal Zone to Balboa (Panama City) in the southeast. Describing the organization of Panama Airways, Stokeley W. Morgan, vice-president and director, explained that the company owns no equipment and hires no employees but actually is a part of Pan American Airways Inc., western division, whose plane and personnel operate the Panama service.

Panama Airways differs from the western division and Uraba, Medellin & Central Airways Inc., which also operate trans-Isthmian flights, in that it is a shuttle service for local traffic between the termini, Morgan said. Prime reason for its existence, it is believed, is the request by the Panama Canal Zone authority which sanctions the separate operation, presumably to discourage possible applications from foreign airlines that might seek to institute local service in the military strategic area.

Formed in Nov. 1936, Panama Airways began Cristobal-Balboa flights in December of that year, carrying passengers and property but no mail, except official government mail transported without charge. During the grandfather period, from May 14 to Aug. 22, 1938, 163 of the 404 flights scheduled between the two cities were completed by the applicant, Morgan testified, while 25 more were handled by aircraft flying the route for the western division and Uraba, Medellin & Central Airways. Of the 216 canceled flights, 141 are attributed to lack of available traffic and the remainder to bad weather. On the other hand, some 50 specials were made when traffic was heavy. Grandfather period traffic included 721 passengers, 510 pounds of express and 11 pounds of mail.

All revenue received by Panama Airways is handled by the western division which credits part of it on prorated basis to Panama Airways for use of airport facilities and expenses shared in common with the other carriers, Morgan revealed. The balance, he explained, is then charged to Panama Airways for personnel and the 10-year-old Ford tri-motor, actual property of the western division. Panama Airways thus has no bank accounts or records, being in reality a paper company.

The second Pan American grandfather case was that of Pan American-Grace Airways Inc., Oct. 26, with a certificate being sought covering essentially that carrier's FAM9 operations, from Cristobal in the Panama Canal Zone along the western South American coast to Arequipa, Peru, the route then splitting with one segment continuing down the coast to Santiago, Chile, and the other branching over to La Paz, Bolivia, each leg eventually terminating at Buenos Aires on the east coast.

Testifying briefly were Harold J. Roig, president and director of the applicant, and Harold R. Harris, vice-president and operations manager.

Roig attested to the U. S. citizenship of the company's officers and indicated that Panagra's 10,000 shares outstanding are held equally by the parent companies, Pan American Airways Corp. and W. R. Grace & Co. Harris, in describing the company's operations during the grandfather period, explained to Examiner Law the difficulty of naming specific intermediate stops on the route, since the various South American governments involved designated rather arbitrarily certain ports of entry and departure which are sometimes changed overnight without advance notice to the carrier. Hence it was asked that the operating certificate be sufficiently broad to include a liberal choice of intermediate stops so that Panagra can meet the requests of local authorities.

Counsels at the proceedings were Henry J. Friendly for Pan American, Edward M. Weld and Edward C. Sweeney for the CAA.

Airline Personnel

New employees in Panagra's New York office are George Herman and John Lillis who take the places of J. W. Crist and Fred Glade, both resigned.

Gordon MacLaren of Northwest has been transferred to the NY office, Rockefeller Center, from Milwaukee city ticket office where he was d.t.m.

Pan Am. has assigned Pat Pattison to the San Francisco district sales office as an outside man.

Joseph Eberly has been transferred by United from Cheyenne, where he was asst. personnel director, to the Chicago office. J. B. Ronald, for eight years chief United inspector at Cheyenne, succeeds Eberly.

Sidney Newcomb of Pan Am's operations office in Miami has been transferred as asst. airport mgr. to Port of Spain.

A 1939 graduate of Parks Air College, Walter McShane is employed in Delta's traffic department at Atlanta.

New Miami personnel for PAA includes John A. Krinkel, Albany, Cal.; Josef Nehring, Floodwood, Minn.; Joseph Pieron, Minneapolis; Millard A. Temple, Birmingham; James H. Watts, White Plains, N. Y., and Florence Rodgers.

Now working with American are the following Parks Air College graduates: William E. Foley, Jr., Ronald F. Hall, Thomas P. Holloran, Michael Perrotta, Merle E. Williams. They are headquartered in Chicago.

Capt. Steve Bancroft, formerly of PAA's eastern division, has been transferred to the Pacific division.

Frank Clark, transferred from United's Cheyenne dispatch office to Chicago has been succeeded by Emory Squellati. Succeeding Squellati is Thomas McCabe, Jr., formerly with United at North Platte, Neb.

New mechanics who have joined Pan Am's eastern division hangar crews at Miami include H. Young, V. J. Ashley, R. C. Atkins, C. Kelly, W. Kelly, W. K. Gordon, H. W. Ogle, T. W. Danton, A. E. Lunn, W. R. Marquis, R. L. Sherbony, R. R. Sherbony, J. A. Wright, H. Buehrmann, R. C. Fleck, H. W. Robinson, J. E. Hartley, W. A. Legge, W. T. Burns, Jr., R. S. Cline, C. M. Dugger, M. O. Johnson, R. B. Sharrard, M. J. Skinner, A. L. Stevens, J. F. Alarie, E. A. Swanson, R. W. Schneider, A. J. Muzzy, M. P. Waters. Trans-Canada has promoted Harry Umphrey to captain pilot.

Charles Schaefer has replaced R. Regnery in Pan Am's San Francisco division traffic office.

Francis W. Porter, William E. Ryder and A. A. Schaeffer, summer graduates of Parks Air College, are employed at PAA's trans-Atlantic base at Dundalk, Md.

Lee Celebrates 10th Year With Pan Am

Lowell Lee, right, district sales manager for Pan American Airways in Washington, who last month celebrated his 10th anniversary with the company, is shown in a recent informal picture with Mrs. Lee and E. G. Rothrock,



also of Pan Am. Lee started with Pan Am in New York, and since then has been stationed in Miami, Bangor, Halifax, Seattle, Fairbanks, Nome, Juneau, Los Angeles and San Francisco. He has been in Washington for the last three years. (American Airlines photo).

Capt. Harold E. Gray has been appointed Atlantic division chief pilot, acting, by PAA.

Mike Polich arrived in Detroit from El Paso recently to take the place of Agent John Higgins for American who was transferred to El Paso.

S. O. Halberg, acting d.t.m. for United in Salt Lake City, has been appointed d.t.m.

A new second operator at Washington for AA is J. C. Roberts, transferred from Newark.

United has promoted Hall Wells from commissary steward to passenger agent at Newark.

Latest addition to American's Los Angeles sales force is Tom Bassett.

The following recently were given distinguished service awards by American: T. G. Rea, J. G. Ingram, W. C. Carnegie, E. N. Coats, I. W. Harris and Lillian Robichaud. Recipients of the award of merit are: C. C. Curry, May Bobbeck, H. W. Sheridan, J. C. Williamson, B. C. Moore, H. S. Tiffany, Willard Reed Jr., S. D. Page and S. L. Willard.

New employee of American's engineering dept. in Chicago are: Frank R. Cassel, formerly with Douglas Aircraft Co.; Herman Schlosser, Walter E. Smith and Mrs. Martha C. Minnick.

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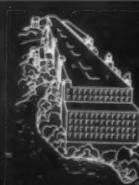
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Patterson Sees 3-Way Operations For Airlines, Stresses Local Stops

Scouts One-Stop Cross-Country Services in Chicago Talk But Sees Need for Feeder Lines; Says DC-3s Are Excellent for Commuting

Airlines of the United States are moving toward three phases of operation and the use of three types of equipment, W. A. Patterson, president of United Air Lines, told the Airliners Club in Chicago recently.

"Our experience up to now has taught us that certain economies could be effected and certain service advantages maintained by the use of standardized equipment," he said. "Now, however, the picture is changing owing to the progress which has been made and is continuing to be made and traffic demands will require the three-way operation."

"These three phases are:

1. Long haul, trunk line flights with planes carrying approximately 50 passengers.

2. Commuter service between large centers of population with planes of the 21-passenger type in service today.

3. Feeder service from smaller communities with planes carrying 6 to 10 passengers.

"In coast-to-coast travel, which requires an overnight journey or an all-day flight, as the case may be, it is obvious that four schedules a day is quite sufficient from the standpoint of frequency of service. The economics of the pay load and seat capacity thus become the determining factors in choosing the character of equipment to be used in these long trunk flights.

"Now in setting up this trunk line service it must be remembered that service must be provided for two classes of travel. There are the through passengers traveling all the way from one coast to the other. Then also there are the passengers enplaning or deplaning at points en route. This brings up the consideration of the connecting lines. Owing to the great increases being made in air travel these connecting lines now are increasing their seat capacity. Lines like Pennsylvania-Central Airlines and Chicago and Southern, for example, are buying 21-passenger planes to replace the 10-passenger planes they have been using.

"Where is the percentage, then, in a trunk line flying 21-passenger equipment when the connecting lines are bringing in 21-passenger planes at several points enroute? If the traffic is increasing on these feeder lines to justify greater seat capacity the traffic must be increasing to justify greater seat capacity on the trunk lines into which those connecting lines feed. It is for this reason that United considered operation of the 4-engined 52-passenger Douglas DC-4 Super Mainliners on its coast-to-coast airways." (Patterson subsequently announced purchase of 40-passenger 4-engine DC-4s—Ed.)

Mr. Patterson said he was disinclined to put much faith in theories of non-stop and one-stop service between the two coasts. He questioned the feasibility of such service for two reasons, one the payload factor and second, that nothing is gained simply by hauling gasoline. He said the greatest airline revenue came from intermediate points along the line.

"Frequency of service is the element which has built up passenger travel on those trips which might be classified as 'commuter flights,'" he said, "such as those between Chicago and New York and between Los Angeles and

San Francisco. The type of equipment now in use is eminently satisfactory for this service and will continue to prevail on these routes."

On the subject of feeder routes Patterson said he looked for very rapid progress and was watching with interest the recently established pick-up mail system, but added that whereas it seemed to work satisfactorily mechanically, he felt that the extension of feeder systems also involved passenger transportation.

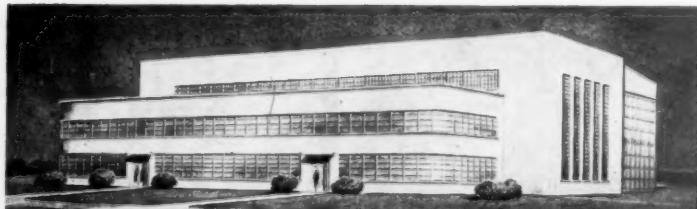
"Under the provisions of the act which created the Civil Aeronautics Authority airline operation is regarded as a public necessity and convenience," he continued. "This means that air transportation is assumed to assist in bringing about social and economic advancement for our people, and this, of course, must apply to the smaller cities as well as the larger centers of population. Under the CAA a community has a right to petition for service. I think the airlines have an obligation to fulfill in this respect."

In some instances the major trunk lines may operate their own feeder lines on routes that seem in close correlation with the trunk lines, he said, while in other instances he believed independent feeder operation would be more feasible. Smaller, lighter, more economically operated equipment carrying 6 to 10 passengers would best serve the purpose of feeders, he said.

Fleming & Fleming

For over 10 years, G. Fleming has been employed in United Air Lines' accounting department in Chicago. For almost as long, G. Fleming has been a mechanic in United's maintenance crew in Chicago. They've been unscrambling each other's mail and telephone calls for so long it's become routine. But they were surprised the other day when T. B. Marshall, United's personnel director, discovered their birthday anniversaries are on the same day—Feb. 21.

United to Spend \$200,000 on Hangar



Construction was expected to start about Nov. 15 on the above \$200,000 hangar for United Air Lines at the new Columbia Airport in Portland, Ore. Embodying several innovations in design, the hangar will be completed about Feb. 1.

A feature of the building will be a partial cantilever roof, which by the elimination of supports on the airplane side will permit the easy maneuvering of planes without the danger of damaging wing tips or tail assemblies. With a size of 110 by 168 ft., the hangar will house three twin-engine planes.

A passenger waiting station, a baggage handling department, a commissary kitchen and various other departmental quarters will be included in the building. Plans include design arrangements simplifying all movement in the terminal quarters. United engineers believe it will be the most modern and efficient airline hangar in the country today.

Second floor will contain offices for the flight operations department, the reservations department and also for two government agencies, the weather bureau and the CAA. Operations office looks directly out on to the field so that dispatchers and other flight executives may watch all field operations.

New ALMA Head



J. H. Foster

Foreman in American Airlines' overhaul shops, was elected president of the Air Line Mechanics Association, International, at its third annual convention which closed in Chicago recently. Full time staff of officers was expanded, the following additional officers being elected: J. L. McFarland, general vice-president, and A. P. Martin, secretary-treasurer. Seventeen delegates were present for the meeting.

Foster is 34 and has served the industry since 1928 with American, Western Air Express and Fokker Aircraft in varying positions from mechanic to field manager. After attending Southern Methodist University for three years, he learned to fly and attended Georgia Tech, studying aeronautical engineering.

State Plane Goes for \$2,060

One of the Pennsylvania Commonwealth's five planes, a Waco ZPF6, two-place semi-open biplane, was purchased by D. B. Tanner of Bradford, Pa., whose \$2,060 bid was highest at a sale in September, it was announced recently. The plane, powered by a Jacobs 285, was advertised for bids during August in AMERICAN AVIATION and other publications.

Along the Line

American Airlines—New overnight Flagship Skysleeper service between Washington and Los Angeles was inaugurated by American on Nov. 1, it was announced by Herbert D. Ford, Washington district sales manager. Washington passengers leave at 7:25 pm. and arrive in LA the following morning at 10:58. Added schedule gives Washington passengers four daily flights on AA to the west coast instead of three.

Eastern Air Lines—In its monthly report to the CAA, EAL stated it received delivery on two DC-3s in August, each powered by two 850-hp. engines. Cost is placed at \$86,603.72 and \$86,431.15 each. Depreciation will be on a four-year basis with residual value per ship of \$5,000.

EAL transported 22,450 revenue passengers in October, setting a new high for the month and marking an increase of 35% over October last year. Revenue passenger miles in October increased 38% as compared with Oct. 1938.

Mid-Continent Airlines—Company is conducting a direct mail campaign with folders using a "make minutes mean more" theme. Showing Mid-Continent's "minute man," potential passengers are urged to make minutes mean more money, business, pleasure and comfort.

Northwest Airlines—On Aug. 8 the company sold a Stinson Reliant for \$2,000, including Lycoming engine, to H. Douglas Smith. It was reported to the CAA. Ledger value Feb. 1936, was \$2,732.44, and total accrued depreciation was \$2,699.85, leaving a net book value of \$32.59.

Pan American Airways—Number of revenue passengers carried throughout the PAA system during the nine-month period ended Sept. 30 jumped 61.15%, an increase of 18% over the corresponding 1938 period. Miles flown over the 63,000 route miles increased 12% for the period, from 3,351,919 in 1938 to 3,742,776 in 1939. Number of passenger miles flown jumped 43% to 29,956,461 in the third quarter of 1939 from 20,978,160 in the like period of 1938.

Pennsylvania-Central Airlines—With announcement from J. J. O'Donovan, vice-president, that PCA expects to place air hostesses on its Detroit-Norfolk route in December, 19 of the 20 hostesses were selected to enter training school in November.

Flashing "check-point" lights, which are automatically turned on by radio signals as a plane passes over a given spot, have been installed in all PCA planes, according to J. H. Carmichael, operations manager.

During October, PCA carried 12,083 revenue passengers, representing a 22% increase over the 9,935 passengers carried in Oct. 1938. Line flew 17,492,442 revenue passenger miles in the first 10 months of this year, a 33.64% increase over the 13,083,496 revenue passenger miles flown during the similar 1938 period.

Trans-Canada Air Lines—Service between Toronto, Ottawa and Montreal has been augmented by a new morning flight from Toronto. Plane leaves Toronto at 8, reaching Ottawa at 9:45 and Montreal at 10:45.

TCA planes also began Nov. 1 the carriage of mail and express on daily survey flights between Montreal and Moncton, N. B. It is anticipated that by early summer of 1940, complete air mail service will be established between Toronto, Montreal and the Maritimes.

Transcontinental & Western Air—Line established an all-time travel record in October when it flew an unprecedented 11,000,000 passenger miles. Record brought total passenger miles for year to approximately 81 million miles, 32% increase over last year and 2% increase over September. The report showed TWA operated 99.7% of scheduled flights during October.

United Air Lines—Company has ordered the 30 Pratt & Whitney twin Wasps engines it has purchased for its fleet of Mainliners equipped with the new injection carburetor system. United has the system installed on six of its Douglas planes, and it was upon these planes that the system was given tests in actual service. Among advantages cited are reduced fuel consumption, reduction of icing, improved smoothness, improved acceleration and easier synchronization of engines.

W. A. Patterson, United president, has announced that the line's autumn schedules have been set up for 1,600,000 miles a month, the largest autumn mileage in the company's history. Operation calls for 20% more seat miles than last year.

Express, Sales, Advertising and Tax Statistics 1938-1939

(Compiled from Official Reports for Year July 1, 1938—June 30, 1939, filed with the CAA)

	Newspaper, Periodical Advs.	Display Advt.	Folders & Circulars	Misc. Publicity & Advertising	Total Traffic & Advt.	Public Relations	Sales Promotion Donated Flights (Miles)	Federal State Income Taxes	General Taxes	Engine Fuel Taxes
American Airlines	\$386,917.37	\$56,398.00	\$10,968.22	\$43,001.24	\$1,026,994.21	\$4,006.15	27,260	\$136,100.00	\$16,532.37	\$175,867.19
Braniff	1,014.44	1,585.98	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00
Chicago & Southern	20,199.60	2,773.21	5,158.15	116,125.20	1,855.75	5,082	11,140.04	28,707.99	3,963.42	1,189.85
Continental	4,022.12	2,575.47	3,903.87	10,052.33	92,401.61	128.50	1,080	19,250.00	15,965.88	11,189.85
Inter-Island	5,515.37	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00
Eastern	14,158.17	1,080.58	2,561.13	1,996.63	61,163.74	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00
Mid-Continent	66,555.00	7,804.33	26,698.42	46,540.55	63,619.38	2,007	17,778	161,823.72	103,084.13	101,144.12
National	3,175.51	396.08	2,000.00	1,160.08	15,320.98	1,121.2	188	3,350.00	8,088.83	18,849.97
Northwest	2,938.51	5,738.50	5,458.79	5,120.50	50,892.56	773.94	328	10,896.58	8,232.20	1,189.85
Pennsylvania-Central	724.51	1,000.00	1,000.00	1,000.00	20,795.08	14.00	1,000.00	2,302.33	1,000.00	1,000.00
TWA	64,457.69	23,440.29	14,315.98	20,16	15,310.61	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00
United Air Lines	908.93	1,000.00	5,709.77	133,066.45	133,066.45	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00
Western Air Express	130,969.16	44,437.39	86,615.24	89,152.18	98,815.69	18,526.93	34,814	122,813.66	63,815.62	1,000.00
	28,155.05	37,146.16	2,000.00	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00
	3,252.77	579.06	4,045.99	49,824.48	105,380.88	1,000.00	1,000.00	1,000.00	1,000.00	1,000.00
	\$1,022,177.01	\$184,757.62	\$327,815.82	\$362,432.80	\$5,483,146.88	\$44,845.17	168,630	\$367,206.07	\$949,947.46	\$707,711.58

Airlines Paid \$2,000,000 in Taxes, \$5,483,000 for Sales & Adv. in Year

Air Express Revenue Only \$1,500,000 With Two Lines Getting Half of This; Sales Cost Comes to \$1.37 Per Passenger

By Eric Bramley

(This is the second article on the operations of the 16 domestic airlines during the fiscal year 1939, which ended June 30, last.)

Advertising and publicity cost the 16 U. S. domestic airlines approximately \$2,000,000 during the fiscal year 1939, ended June 30, last, while a similar amount went for taxes of various kinds, according to year-end reports filed with the Civil Aeronautics Authority.

Of the \$5,483,146.88 total traffic and advertising expense, 34.6% or \$1,897,183.25 went for advertising—newspaper, periodical, folders, circulars and miscellaneous. Placing this latter sum against 1,384,591 revenue passengers carried reveals expenditure of \$1.37 per passenger. Comparing it with 76,393,938 total miles flown, shows \$.0248 per mi.

Possibly the most unitemized account in the CAA uniform system of accounts is the one entitled "miscellaneous publicity and advertising," totaling \$362,432.80. This is more than was spent on either folders and circulars or display advertising.

The \$1,897,183.25 figure above does not include \$44,845.17 listed as "public relations" expense. The fact that in most cases this account is small indicates that entertainment, etc., is being listed elsewhere, possibly in the "miscellaneous" column.

It will also be noted that 168,630 miles were flown in the interest of sales promotion, etc., with the four major airlines being responsible for most of such mileage. At an average operating cost of 62.9¢ per mi., these miles took \$106,068.27. To carry a point further, they equal approximately 65 trips from New York to Los Angeles.

The taxes making up the \$2,000,000 were federal and state income, general and engine fuel. A few of the items in the general taxes are real and personal property, social security, franchises and gross profits. The self-explanatory engine fuel tax is significant in that it constitutes the better part of \$1,000,000.

Another item which cost the industry a considerable amount of money was the \$320,980.33 "agency commissions." If it were not for the use of air travel cards, on which agencies do not receive commissions, this account would have been much larger.

Express and freight revenues, which totaled less than \$1,500,000, show that the industry is weak in this respect, especially when it is noted that two carriers—United and American—accounted for more than one-half the total.

Correction

Because of changes made by the printers after final proof had been okayed on the Nov. 1 issue, five serious errors appeared in the tabulation of airline statistics on Page 24.

All five errors represented transpositions in the column entitled "U. S. Mail Revenue" for the following airlines: Inter-Island, Mid-Continent, National, Northwest and Pennsylvania-Central. The correct figures in proper order are:

Inter-Island	546,380.25
Mid-Continent	320,114.68
National	157,368.30
Northwest	1,805,134.72
Penn-Central	819,871.41

The above figures should be pasted over the incorrect listings in the last issue if the tables are being saved for reference.

Douglas

(Continued from page 1)

000,000 during the last decade in developing experimental models.

Employment for 1939 will average about 9,650 with a payroll of \$15,000,000. Employment figures have shown a steady increase since the company began in 1922, with a large proportion of the company's business in commercial models.

Mr. Douglas also revealed plans to provide a "mass vacation" with pay for 12,000 employees. Plan contemplates a vacation of one full week during the summer for every man and woman on the payroll six months or longer. Vacation period will cost the company approximately \$400,000.

The two plants at Santa Monica and El Segundo, Cal., will close for nine days without loss of pay. Plants now operate on a 40-hr. 5-day week.

Studies will be made early in 1940 to determine the most appropriate time for the vacation. The plan has been under consideration by Mr. Douglas for many months.

Lincoln Airplane School Elects C. A. Sjogren

Prof. C. A. Sjogren recently was elected to the faculty of Lincoln Airplane & Flying School, Lincoln, Neb., to serve as educational director of the school, a newly created post. His appointment climaxes 20 years of experience as teacher professor and director in the field of industrial and mechanical engineering.



Prof. Sjogren is a mechanical engineer graduate from the University of Nebraska. He also studied at the Universities of Michigan and Minnesota from which latter institution he received his Master's Degree.

His work at the Lincoln school will include coordinating efforts of the instructional staff; revision of curricula as necessitated by advances made in aeronautical and mechanical engineering and to advise with instructors on student relations.

Knight Recovering

Jack Knight, United Air Lines' well known pilot and present director of education, is recovering from a severe injury received when he tripped over a light cord in a Detroit hotel. He has been removed to his home in Chicago.

Airlines Buy Reliants

For Flight Training

Sale of six Stinson Reliants for instrument flight training on three airlines has been disclosed by William A. Mara, vice-president-sales, Stinson Aircraft Div., Aviation Manufacturing Corp., Wayne, Mich.

Pan American Airways, which previously purchased a Reliant for use in Alaska, is having four Reliants especially fitted for use in providing instrument flight training for their pilots," Mara said. Three of the ships will be powered by 300-hp. Lycoming engines, and a 450-hp. Pratt & Whitney Wasp will be used in the other plane.

An innovation in blind flight instruction will provide three complete sets of controls so the instructor may train two pilots simultaneously. Two control sets are located in the front of the plane, and the third set, as well as a second instrument panel, is mounted in the rear.

American Airlines has ordered another Reliant powered by a 350-hp. Wright engine. This brings American's Stinson fleet to a total of five, all of which are used for instrument training.

The Boeing School of Aeronautics, Oakland, Cal., which trains personnel for work on United Air Lines, also purchased a Reliant powered by the 260-hp. Lycoming engine for instrument training work.

Other airlines using Stinsons for instrument training and executive transportation are Eastern Air Lines, with a fleet of two Reliants; Braniff Airways, which uses a 450-hp. Wasp Reliant; Northwest Airlines and Chicago & Southern Air Lines, both operating Lycoming-powered models, and All American Aviation Inc., which operates a fleet of six Reliants.

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Views of Boeing School and its Director



A street view of hangar 5 of Boeing School of Aeronautics, Oakland, Cal., is shown in upper left photo. This is one of two large hangars shared jointly by the Boeing school and United Air Lines at Oakland Airport.

Upper right—T. Lee, Jr., director of the Boeing school, is studious, able and always planning for the future.

Bottom is a field view of Boeing school-United facilities on Oakland Airport.

Boeing School Completes 10 Years Under the Direction of T. Lee, Jr.

Boeing School of Aeronautics completed this fall 10 years of aeronautical instruction at Oakland, Cal., a record nothing short of venerable as aviation schools are concerned.

Not the least important feature of this decade of existence is that T. Lee, Jr., originator of the school, is still the active director and didn't take time out from his work to stage a celebration. The 30 faculty members observed the anniversary by launching the school's 11th year of courses.

In the 10 years more than 1,000 students have been graduated into positions in commercial air transport and aircraft manufacturing, and more than 500 students have been taught to fly in the course of 60,000 hours of rigid flight instruction. A notable safety record has accompanied this instruction, for there has been only one fatality and that was from heart failure. All factors considered, the Boeing school probably has no equal in the world from the standpoint of safety.

T. Lee, Jr. was flying in 1927 as a pilot for Pacific Air Transport (a predecessor division of United Air Lines) when he conceived the idea for a school to teach men to become airline pilots. The days of being able to get an airline job just because one knew how to fly were about over. He decided that the future requirements of the industry would call for pilots with technical training and executive ability, mechanics with mental tools as well as wrenches, engineers with practical back-

grounds to go along with their theoretical knowledge and operations men thoroughly schooled in a number of fields.

Two years later Lee saw the fulfillment of his idea with the establishment of the Boeing school in the fall of 1929 and his appointment as organizer and director.

Among the charter members of the faculty are George I. Myers, superintendent of flying, and Herbert Harsh, director of technical instruction. Don McDaniel, registrar, was a student in the first class and because of his natural ability and his school record was retained on the staff following graduation.

Boeing school uses six different types of trainers, varying from an eight-ton multi-engined transport plane to planes weighing 2,577 pounds. In 1929 the most extensive course required only nine months and included 22 subjects and 924 hours of lecture, laboratory and shop work. Today each major course includes 3,724 hours of study in 49 separate subjects and requires 24 months to complete.

ADVERTISING

Aeronautical Publications

Aeronautical Publications, Bendix Airport, Bendix, N. J. will use newspapers and national magazines to promote its aviation preparatory course. Agency is Jasper, Lynch & Fischel, Inc.

Luscombe Airplane Corp.

Luscombe Airplane Corp., West Trenton, N. J. will use magazines, business papers and direct mail in its account with Wales Advertising Co., New York.

Patterson Announces 4 United Scholarships

Four scholarships with a total tuition value of \$11,500 in the Boeing School of Aeronautics were announced by W. A. Patterson, president of United Air Lines, for undergraduate students in universities, colleges or junior colleges in the United States or Canada. Winners of the four United awards will be given their choice of one of seven non-flying courses in the Boeing school at Oakland, Cal., plus 10 hours of instrument flight training in the Link trainer and 20 hours of dual and solo flight instruction.

Courses offered include airline operations and engineering, meteorology, air transport engineering, airline mechanic and technician. The winner showing the best aptitude upon completion of the first quarter's work will be selected to complete the airline pilot flying instruction of 285 hours, valued at \$4,600.

Scholarships will be awarded on the basis of written treatises of a maximum 3,500 words on some technical or non-technical aeronautical subject. Mar. 11, 1940, is deadline for the submission of papers and the winners will be enrolled in the class starting July 1, 1940. The award committee includes Dr. Baldwin M. Woods, head of the department of mechanical engineering, University of California, chairman; William B. Stout, former president of the American Society of Automotive Engineers.

Boyle Appointed Lear Mgr.

C. P. Boyle has been appointed manager of the Dayton, O., factory of Lear Developments Inc., it has been revealed by William P. Lear, president.

School News

Alabama Institute of Aeronautics, Tuscaloosa, Ala.—Eric L. Rayner, graduate of Parks Air College, is now a flight instructor for the Air Corps training program at AIA.

Davis Flying School, Lansing, Mich.—A ground school was opened here recently under the direction of H. G. Meyers, formerly with Indiana Air Service and former manager of the Dallas Aviation School. School also is planning a mechanics' course.

Luscombe School of Aeronautics, West Trenton, N. J.—Fall class opened with the largest enrollment in the school's history. Next class will begin Jan. 3.

Parks Air College, East St. Louis, Ill.—Kenneth H. Lane, Stephen Sautin, Jr., and George H. Watkins, all Parks graduates, have joined the school's line maintenance staff.

Rising Sun School of Aeronautics, Philadelphia, Pa.—School has added a Grumman XSF-1 scout plane to its equipment. Plane is powered by a 770-hp. Wright Cyclone. Also added to equipment were a Martin T4M torpedo-bomber fuselage for riveting practice and a Vought O2U observation ship which is being used by the engine dept. for a Pratt & Whitney R-1340-B Wasp engine installation.

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Combine of Solar Co.; Aircraft Accessories Asked in LA Proposal

Plans for an interchange of stock between Aircraft Accessories Corp. of Glendale, Cal., and Solar Aircraft Co. of San Diego, Cal., were revealed with the filing of an application for hearing as to the fairness of the proposed offer with the state corporation department in Los Angeles. It was disclosed in a statement issued by Aircraft Accessories.

"Under the plans as outlined in the application, Aircraft Accessories will become an operating subsidiary of Solar Aircraft Co., resulting in the formation of the largest secondary aircraft company on the Pacific coast, and one of the largest in the nation, with an estimated sales volume of approximately \$2,000,000 a year. In addition to the Army and Navy, customers of the new combine will include practically every major aircraft manufacturing company and airline in the U. S. and several large foreign companies.

"Manufacturing facilities will be divided between three plants, including that of Solar in San Diego, Aircraft Accessories in Glendale and the plant of Aircraft Accessories' wholly owned subsidiary company, the Siebenhaar Manufacturing Co., Kansas City, Mo.

"Among the products manufactured by the new unit will be exhaust manifolds, cabin-heaters, fuel and oil tanks, hydraulic actuating equipment for landing gear, wing flaps, etc.; complete hydraulic installations for military aircraft, de-icer spinners, a wide range of radio and direction finding devices and other miscellaneous accessory parts.

"According to the application, Solar will exchange one share of its capital stock for each outstanding share of Aircraft Accessories outstanding, numbering 122,500. In addition, it is understood, Solar will purchase the 80,000 shares of Aircraft Accessories stock presently registered with the SEC. This will give the Glendale firm capital to complete the equipping of its building recently acquired, so that manufacturing operations can begin there.

"Solar Aircraft Co. has an authorized capital of 300,000 shares. Stockholders at the annual meeting voted to increase it to 600,000 shares. At a meeting last month, stockholders authorized the creation of a preferred stock issue of 250,000 shares.

"Company at present has 227,494 shares of common stock outstanding and indications are that an issue of convertible preferred stock will be sold to take care of financial needs. Identities of the two companies, it is understood, will be retained and each will continue its present plan of operations, with an interlocking of officials and directors," the statement said.

Secret Employee Election for Douglas Announced by NLRB

A secret ballot election before Nov. 24 among workers of Douglas Aircraft Co. Inc., El Segundo (Cal.) division, who are engaged during more than 50% of their working time as welders, cutters, helpers and apprentices has been ordered by the NLRB. Employees will vote to determine whether or not they desire to be represented by United Aircraft Welders of America, an unaffiliated labor organization.

"In view of the company's desire that two units—one for each plant—be established, and the absence of any disagreement therewith by the United union, the board ordered that separate elections will be conducted among the employees in the above classification at each of the plants," the NLRB announcement said.

Lewis Succeeds Shelton

Roger Lewis has been named purchasing agent of Lockheed Aircraft Corp., Burbank, Cal., to succeed A. E. Shelton who has resigned to head Menasco Manufacturing Co. Lewis has been a Lockheed employee since 1934.

EVEREL NAMES CHIEF Hackethal Is New Head of Engineering & Production; Formerly With Smith Prop Co.

Everel Propeller Corp., Baltimore, Md., on Nov. 3 announced appointment of Paul F. Hackethal as chief of engineering and production.

Hackethal formerly was chief engineer of Smith Prop Co., Cleveland, O., where he was responsible for development of

the Smith Controllable Pitch Propeller, later acquired by Aviation Manufacturing Corp., where it was manufactured by the Lycoming Div. Hackethal was transferred at that time to Lycoming's engineering department.

During the last 10 years he has been occupied in the design and production of variable pitch propellers.

A. E. Shelton Heads Menasco Mfg. Co.

Appointment of A. E. Shelton as president and a director of Menasco Manufacturing Co., Los Angeles, was announced late in October by the company's board of directors. Appointment was effective immediately.

Since 1935, Shelton has headed the purchasing department of Lockheed Aircraft Corp., which position he resigned to take up his new duties.

The Menasco company is the largest producer on the Pacific coast of air-cooled, in-line aircraft engines. At the present the company is maintaining rapid delivery schedules to governmental domestic and foreign purchasers for an unannounced number of model C-4 engines for training planes. Company also is working against bookings for its B-6 and Unitwin engines, both of which now are in production.

"Due to the European war, there has been a sharp increase in the number of inquiries for engines suitable for installation in light military training airplanes," according to company officials.

Other company officers are Robert E. Gross, vice-president; Glenn Shrader, treasurer; Nova Poynter, secretary.

Messer Named Lockheed Assistant; Units Shifted

Lockheed Aircraft Corp. on Oct. 30 revealed appointment of B. W. Messer as assistant employment manager and the shifting of the company's purchasing department under the production control office.

Messer resigned his position as assistant engineering manager to accept the new appointment. He has been employed by the Burbank, Cal., firm since July 1935.

In making the purchasing department a part of the production control office, activities of the two units were placed in charge of G. W. Carr, former president of Menasco Manufacturing Co.

Robbins Succeeds Shattuck

Hugh C. Robbins, former president and treasurer of H. C. Robbins Co., Cleveland, O., has been elected to the board of directors of Continental Aeronautic Corp., Burbank, Cal., and to the office of secretary and treasurer recently vacated by C. H. Shattuck, resigned. Shattuck left the company due to ill health.

Stock Holdings

Following is official summary of transactions and holdings of officers, directors and principal stockholders of corporations with equity securities registered, filed with the SEC Sept. 11 to 30. Unless otherwise indicated transactions were made in August and holdings are as of the end of that month:

Aero Supply Mfg. Co. class B—Leclanche Moen, director, holds none directly; through partnership (property interest not shown) decreased 1,400 in July and 600 in August, holding 39,446. Henry A. Rudkin, director, holds none directly; through partnership (property interest not shown) decreased 1,400 in July and 600 in August, holding 39,446.

American Airlines Inc.—Harry E. Benedict, director (Mar. 1939), increased common 12 to 901 and disposed of all of \$10,000 4½% convertible debentures. William Littlewood, officer, acquired 500 common, holding that amount, and holds \$1,250 4½% convertible debentures.

Bell Aircraft Corp.—National Aviation Corp., beneficial owner (July 1939), increased common 8,347 through exercise of warrants, holding 29,817.

Bellanca Aircraft Corp. common—Ben Howe, director, increased 100 in July 1939 and 200 in August, holding 700.

Bendix Aviation Corp. common—Edwin R. Palmer, officer & director, decreased 1,000 to 200.

Canadian Colonial Airways—David F. Booth, director (resigned Sept. 25, 1939), decreased 300 to 6,100.

Eastern Air Lines Inc. common—George Blaine Howell, director, decreased 100 to 150.

Fairchild Aviation Corp. common—James S. Osgbury, officer & director, increased 200 to 845.

Seversky Aircraft Corp. common—A. P. de Seversky, officer & director, decreased 8,000 in Nov. 1938, 4,000 in Feb. 1939, 2,700 in March, and increased 35,714 through exchange in April, holding 76,729 at end of that month; also acquired \$125,000 convertible demand notes in Nov. 1938 and exchanged all in Apr. 1939. Paul Moore, director (Nov. 1938) holds 171-257 common; acquired \$770,000 convertible demand notes in exchange for non convertible demand notes, and delivered \$102,000 as commission. \$58,000 to A. P. de Seversky for his continuous interest in issuer, and disposed of balance of \$610,000, holding none.

United Air Lines common—William A. M. Burden, director (July 1938), increased 2,000 to 4,836.

Following is official summary of transactions and holdings of officers, directors and principal stockholders of corporations with equity securities registered, filed with the SEC Oct. 1 to 10. Unless otherwise indicated transactions were made in September and holdings are as of the end of that month:

Beech Aircraft Corp. common—O. A. Beech, officer, increased 1,778 to 10,411. J. A. Harris 3rd, director, decreased 4,000 to 72,000. T. A. Wells, officer, increased 10,000 to 11,920.

Bell Aircraft Corp. common—National Aviation Corp., beneficial owner, decreased 3,000 to 26,817.

Bendix Aviation Corp. common—Edwin R. Palmer, officer & director, disposed of all of 200.

Brewster Aeronautical Corp.—James Work, officer & director, holds 103,404 capital shares and 10,700 common war-

Big Airline Orders

Col. Edgar S. Gorrell, president of the Air Transportation Association, reported at the association's annual meeting in New York City Oct. 13 that the airlines of the U. S. have placed \$25,000,000 in orders for planes, engines and accessories this year.

rants; in trust decreased capital shares 1,100 to 4,900.

Chicago & Southern Air Lines—John R. Longmire holds 2,782 common and 215 convertible preferred; through partnership (property interest not shown) disposed of all of 473 convertible preferred.

Continental Motors Corp. common—Leslie L. Vivian, director, acquired 1,000, holding that amount.

Eastern Air Lines common—Stuyvesant Peabody, director, disposed of all of 100.

Ex-Cell-O Corp. common—H. G. Bixby, officer & director, decreased 100 to 300.

Lockheed Aircraft Corp.—Randolph C. Walker, director, holds 300 directly; through Mrs. J. S. Walker (property interest not shown) decreased 1,000 to 11,200.

Menasco Manufacturing Co. common—Gardner W. Carr, director, decreased 2,000 to 6,100.

Pan American Airways Corp. common—John C. Cooper Jr. officer, decreased 100 to 154. J. H. Johnson, officer, decreased 100 to 1,000.

Pennsylvania-Central Airlines—George R. Hann, director, increased capital shares 1,000 to 4,152 and holds 762 common warrants.

Seversky Aircraft Corp. common—A. P. de Seversky, director, decreased 3,500 to 70,229.

Transcontinental & Western Air common—Hughes Tool Co., beneficial owner, increased 8,600 to 156,893.

United Aircraft Corp. common—Joseph F. McCarthy, officer & director, decreased 300 to 3,700.

United Air Lines common—Martin C. Ansorge, director, increased 200 to 400.

Warner Aircraft Corp. common—Lawson A. Faunce, officer & director, increased 100 to 300.

CURTISS EXPANSION

Aeroplane Div. at Buffalo Building 3 New Structures at Cost of \$232,000

Buildings which will cost an estimated \$232,000 will be erected in Buffalo, N. Y., by Curtiss Aeroplane Div. of Curtiss-Wright Corp. to handle present large U. S. Army orders and expected European contracts of nearly \$30,000,000 as a result of repeal of the arms embargo.

Three new buildings will be included in the expansion move, one of them to house a wind tunnel. Largest of the three will be a 116 by 304 ft. structure. Second will be 100 by 203 ft., and the third will be 48 by 130 ft.

The division recently was granted a building permit for a \$65,000 job, not included in the new permit.

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(Awards of \$10,000 and Over)

Release Date Shown

AIRCRAFT

Lockheed Aircraft Corp., Burbank, Cal., 11/3, airplanes, \$117,668 (Navy).

ENGINES, PARTS, ACCESSORIES

Pioneer Instrument Co. Inc., Bendix, N. J., 10/20, drift type meter assy., \$573,990 (Air Corps).

Pratt & Whitney Aircraft Div., United Aircraft Corp., East Hartford, Conn., 10/21, engines, \$349,927.60 (Navy).

Pratt & Whitney Aircraft Div., United Aircraft Corp., East Hartford, Conn., 10/21, engines, \$20,563.40 (Navy).

Curtiss Propeller Div., Curtiss-Wright Corp., Clifton, N. J., 10/21, parts, \$12,689.58 (Navy).

Eclipse Aviation Div., Bendix Aviation Corp., Bendix, N. J., 10/26, starter assy., \$191,836 (Air Corps).

Eclipse Aviation Div., Bendix Aviation Corp., Bendix, N. J., 10/26, option on existing contract, \$822,020.60 (Air Corps).

Sperry Gyroscope Co. Inc., Brooklyn, N. Y., 10/26, indicator assy., option on existing contract, \$1,131,260 (Air Corps).

General Electric Co., Schenectady, N. Y., 10/26, supercharger assy., option on existing contract, \$878,012 (Air Corps).

Eclipse Aviation Div., Bendix Aviation Corp., Bendix, N. J., 10/27 cartridge starters, \$26,924.60 (Navy).

Kay Products Co., Detroit, Mich., 10/31, wind direction indicator assy., \$11,518 (Air Corps).

Pump Engineering Service Corp., Cleveland, O., 11/4, pumps, \$11,339.15 (Navy).

Cambridge Instrument Co. Inc., New York, N. Y., 11/4, indicator assy., \$11,375 (Air Corps).

MISCELLANEOUS

U. S. Industrial Chemicals Inc., New York, N. Y., 10/21, Acetone, \$14,964.66 (Air Corps).

Standard Oil Co. of Cal., San Francisco, Cal., 10/21, aircraft engine fuel, \$14,828 (Air Corps).

Standard Oil Co. of Kentucky, Louisville, Ky., 10/21, aircraft engine fuel, \$37,000 (Air Corps).

Lewis Bear Co., Pensacola, Fla., 10/21, ship's store articles, \$22,804.32 (Pensacola Naval Air Station).

Shell Oil Co. Inc., New York, N. Y., 10/24, aircraft engine fuel, \$54,510 (Air Corps).

Shell Oil Co. Inc., New York, N. Y., 10/26, fuel, option on existing contract, \$54,151.10 (Air Corps).

York Ice Machinery Corp., York, Pa., 10/26, refrigerating system, Wright Field, Dayton, O., \$189,294 (Air Corps).

Rohr & Haas Co., Philadelphia, Pa., 10/26, transparent plastic sheet, \$128,303.90 (Air Corps).

American Steel Wire Co., Columbus, O., 10/26, cable, \$103,958 (Air Corps).

Standard Pressed Steel Co., Jenkintown, Pa., 10/26, benches & stools, \$24,115.38 (Air Corps).

E. H. Sheldon & Co., Muskegon, Mich., 10/26, benches & stools, \$14,473.80 (Air Corps).

Goodyear Tire & Rubber Co., Akron, O., 10/26, pneumatic rafts, option on existing contract, \$72,044 (Air Corps).

National Supply Co., Philadelphia, Pa., 10/28, generator plants, \$75,684 (CAA).

Federal Telegraph Co., Newark, N. J., 10/28, radio equipment, \$311,906.70 (CAA).

Allis-Chalmers Manufacturing Co., Milwaukee, Wis., 10/30, dynamometer bed-plates, \$15,454 (Air Corps).

*Arundel Corp. and Consolidated Engineering Co. Inc., Baltimore, Md., 11/1, for construction of naval air base at San Juan, P. R., as a joint venture, \$8330,000 (Navy).

Russell & Pugh Lumber Co., Springfield, Ida., 11/4, lumber, \$10,925.60 (Air Corps).

Bendix Radio Corp., Baltimore, Md., 11/4, radio equipment, \$281,325.50 (CAA).

Bunell Machine & Tool Co., Cleveland, O., 11/4, propeller tools, \$27,956.15 (Air Corps).

United Aircraft Corp., East Hartford, Conn., 11/4, material to rebarrel cylinders, \$113,563.35 (Navy).

*See story on page 14.

NEW YORK STOCK EXCHANGE

Week Ended Oct. 28

	Week Ended Nov. 4							
	High	Low	Change	Sales	High	Low	Change	Sales
American Airlines	40%	37	+ 3%	8,500	40%	37%	- 1%	8,600
Aviation Corp.	71%	63%	+ 3%	90,200	95%	7	+ 2	193,600
Bendix Aviation	33%	30%	+ 1 1/4	75,400	33%	31	+ 1 1/4	51,200
Boeing Airplane	31%	29	+ 1/8	37,000	31%	28 1/2	+ 1/8	35,700
Consolidated Aircraft ..	31%	28 1/2	+ 1 1/4	51,000	32%	29 1/2	+ 1 1/4	41,700
Continental Motors ..	3 1/2	3	....	22,300	5 1/2	5 1/2	+ 1 1/2	240,300
Curtiss-Wright	9	7 1/2	+ 1	259,100	13 1/4	9	+ 3 1/2	573,700
Curtiss-Wright A	29%	28	+ 1 1/2	30,400	32 1/2	29 1/4	+ 2	47,900
Douglas Aircraft	86%	81	+ 1/8	32,500	87 1/2	82 1/2	+ 1 1/8	38,600
Eastern Air Lines	24	22 1/2	+ 1	24,400	25	23 1/2	+ 1/8	24,100
Ex-Cell-O	25%	23%	+ 1 1/2	6,600	25 1/4	23 1/4	+ 1 1/4	5,400
Glenn L. Martin	42%	39%	+ 1/2	46,900	45 1/2	40 1/2	+ 3 1/2	90,900
Natl. Aviation Corp.	14 1/4	13 1/2	- 1/4	15,800	15	13 1/2	+ 1/2	20,200
N. American Aviation	29	24 1/2	+ 2 1/2	192,200	29 1/2	26 1/2	+ 1 1/2	153,700
Pan American Airways	16 1/4	15 1/2	+ 1/8	3,800	16 1/4	15 1/2	- 1/4	3,500
Sperry Corp.	51 1/2	48 1/2	- 3 1/2	21,200	50 3/4	47 1/2	....	25,800
Thompson Products	32 1/2	30 1/4	+ 1/8	8,900	33 1/4	30	+ 1	6,700
TWA	11 1/2	10 3/4	....	4,600	11 1/4	10 1/2	- 1/2	6,300
United Aircraft	48 1/2	45 1/2	- 3 1/2	42,600	51	46 1/2	+ 3 1/2	75,600
United Air Lines	12 1/2	11 3/4	+ 7/8	23,700	13 1/2	12	- 1/2	34,200
Wright Aeronautical ..	120%	117	+ 2	390	124 1/2	118	+ 4 1/2	1,100

NEW YORK CURB EXCHANGE

Week Ended Oct. 28

	Week Ended Nov. 4							
	High	Low	Change	Sales	High	Low	Change	Sales
Aero Supply A	20 1/2	20 1/2	+ 1 1/2	100	21 1/2	20 1/2	....	....
Aero Supply B	5	4	+ 1	6,600	5 1/2	4 3/4	+ 1 1/4	6,300
Air Associates	10 1/2	9 1/4	+ 1 1/4	2,100	10	9 1/2	+ 1/4	500
Air Investors	2	1 1/8	....	500	2 1/4	1 7/8	+ 1/4	2,200
Air Investors, war ....	....	....	....	....	1 1/2	1 1/2	....	200
Aviation Transp.	33%	31 1/2	+ 1 1/2	22,700	41 1/4	38 1/2	+ 1 1/2	118,200
Beech Aircraft	10 1/2	10 1/4	- 1/4	18,200	11 1/2	10 1/2	+ 1/2	23,000
Bell Aircraft	26 1/2	25	+ 3/4	7,500	27	23 1/4	+ 1 1/4	7,500
Bellanca Aircraft	9 3/4	8 7/8	+ 1 1/2	9,300	10	9 1/4	+ 1/2	13,400
Breeze Corps.	8	6 5/8	+ 1 1/8	7,900	9 3/4	7 1/2	+ 1 1/2	6,800
Brewster Aero.	9	8 3/8	....	15,200	10 1/2	8 1/2	+ 1 1/2	20,600
Canadian Colonial	53%	5	- 1/2	1,400	6 1/2	5 3/4	+ 1/2	2,000
Fairchild Aviation	12 1/2	11 1/2	- 1/2	5,100	13 1/2	11 1/2	+ 1/2	14,800
Grumman Airc't Eng.	18 1/4	17	- 1/4	5,700	18 1/4	16 3/4	+ 1/4	7,200
Irving Air Chute	20 1/2	20	....	1,700	20 1/2	19 7/8	+ 1/2	1,800
Lockheed Aircraft	33%	31 1/4	+ 1 1/2	46,200	34	30 1/2	+ 1/2	45,900
Penn-Central Airlines	8 1/2	8 1/4	- 1/2	1,400	8 1/2	8 1/2	+ 1/2	1,300
Republic Aviation	5 1/2	5 1/4	+ 1/2	37,100	7 1/2	5 3/8	+ 1 1/2	128,400
Roosevelt Field	1 3/4	1 1/2	+ 1/2	600	1 7/8	1 3/4	....	300
Waco Aircraft	5 1/2	5 1/2	+ 1 1/2	1,000	7 3/8	5 3/4	+ 1 1/2	2,800
Western Air Express ..	4 1/4	4	+ 1/4	1,600	4 1/4	3 7/8	- 1/2	1,500

Curtiss-Wright Buys

Pitt Screw & Bolt's

Propeller Division

Purchase of the propeller division of Pittsburgh Screw & Bolt Corp., Pittsburgh, Pa., by Curtiss-Wright Corp. and absorption of the division by Curtiss Propeller Div. at Clifton, N. J., were announced on Oct. 27 by Guy W. Vaughan, C-W president. The transfer took place on Nov. 1.

Personnel of the Pittsburgh organization "will be retained as far as possible," said Vaughan. Financial terms of the deal were not announced. Equipment and patents are included in the sale. John P. Hoelzel, president of the Pittsburgh corporation, said Curtiss will continue the manufacture of hollow steel blades at the present plant in Pittsburgh, a lease having been entered for an extended period.

"The increasing trend in the aviation industry toward the use of hollow steel blades, because of their lightness and greater durability and our plans for developing a self-contained propeller manufacturing division make this purchase a logical and important addition," Vaughan said. "It supplements ideally our own propeller division's mass production of aluminum alloy blades for all types of airplanes."

STOCK COMMENTS

By Philip P. Friedlander

The recent thrust forward of aviation stocks reaffirms to investors and speculators that sooner or later real values find expression in the marketplace. The news on aviation securities has been exceedingly bullish for some time, but it wasn't until the middle of October that finally these stocks asserted a leadership in the market. Now the question arises, whether at this point they have discounted the future to a marked degree, and whether holders of these equities should not cash in on the profits.

The journey forward has been a large one. During August the averages sold as low as 29.06 and during the first week of November touched a new high of 46. A 17 point move is quite substantial, and this in itself should dictate a cautious buying attitude.

The business of aviation manufacturing companies has increased tremendously and some Wall Street sources estimate that these plants will handle \$500,000,000 volume during 1940. Against this figure it was estimated that the current backlog would amount to \$340,000,000. The growth in this industry recently has been substantial, caused by reararmament demands in this country, and war needs for the allied nations abroad. But the very nature of this business necessitates caution in appraising the future insofar as it relates to stock prices. A great deal then depends on how long this war will last, and with this unknown factor to be evaluated, prices of these securities should naturally lag behind the actual prosperity of the industry. But this does not mean that aviation stocks will not seek higher levels. It does mean, however, that great care will be used in selecting the various equities of these companies. It is the opinion of quite a few students that at the present moment most of the higher price aviation stocks representing the larger companies have courted quite a public following. Generally, this suggests an overbought position. However, it appears that the smaller companies whose business have not been so spectacular this year will enjoy better business next year, and these securities will be attractive to traders and speculators. The lower price aviation stocks in most cases will find willing and anxious buyers, and should respond market-wise.

This column pointed out in the last issue that the 46 point should be a resting place on the journey forward. The averages now flirting close to this area should back and fill a while longer before completing the move. It is important to remember that at the 51 level aviation stocks should be sold for an opportunity to repurchase at more attractive levels.

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Spencer-Larson Corp. Absorbing L. I. Firm

Spencer-Larson Aircraft Corp. on Oct. 28 completed arrangements for the absorption of Long Island Aircraft Corp., organized a year and a half ago to specialize in military work, Gilbert Colgate, who recently was elected chairman of the former company, revealed.

Under the merger, John W. Kenny, president of the Long Island firm, which has had its plant at Lindenhurst, N. Y., has been named a director and vice-president in charge of production for Spencer-Larson. Terms of the merger were not disclosed.

In order to carry out a production program for amphibians and seaplanes made public in mid-October following its reorganization, the Spencer-Larson company also made arrangements to acquire the hangar-factory built by Fairchild Airplane Manufacturing Corp. at Amityville, L. I., 10 years ago as a seaplane base, Colgate announced.

The Long Island company has been one of four companies in the U. S. under contract to rebuild aircraft units in the Coast Guard service. It was founded by Kenny after 12 years as an engineer for leading aircraft companies, during which time he specialized in military design.



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AIRPLANE MFG. & SUPPLY CORP. Registration statement for 210,000 shares of \$1-par common filed, with G. Brashears & Co., underwriting Company, with offices at 6235 San Fernando Road, Glendale, Cal., was incorporated Apr. 13, 1939, to acquire from Earl Herring an option agreement with Bendix Aviation Ltd. to buy Pacific Automotive division of Bendix Aviation Ltd. and Airplane Parts & Supplies, another division. New company will purchase both divisions and operate under new name, establishing sales and service facilities at other centers. Earl Herring is president, general manager, director. E. H. Conerton is vice president, director; E. O. Locher is secretary & treasurer; Palmer Nichols, director.

NORTHWEST AIRLINES INC. states unpaid accumulated dividends on preferred stock at June 30 amounted to \$6.25 a share (\$3,062.50) on 490 shares. July 31 stock holdings included: Croll Hunter, president, director, 1,425 common; E. I. Whyatt, secretary & treasurer, director, 1,000 common; Camille L. Stein, director, assistant secretary, assistant treasurer, 1,410 common; L. M. Leffingwell, director, 1,007 common; T. E. Irvine, director, 52,850 common (22.97%); 125 preferred (25.51%); William Stern, director, 100 common; Shreve M. Archer, director, 50,000 common (21.73%); R. C. Lilly, director, 19,800 (8.61%), and as trustee for three trusts, 23,580 common (10.25%); Brack & Co., 259 preferred (5.86%).

AVIATION CORP. reports that Oct. 16 it signed a contract with Lycoming Mfg. Co., which was later approved, whereby Lycoming agreed to transfer all its assets to Aviation Corp., in exchange and in consideration for issuance to Lycoming of 206,000 presently unissued Avi-Air shares and assumption of all liabilities by Lycoming since institution of bankruptcy proceedings, with certain exceptions. In balance sheet of Lycoming Mfg. Co., as of Sept. 30, assets are net \$2,700,000. Accrued liabilities of the kind to be assumed are carried at \$296,000. Assets to be acquired include plant, property and equipment at Williamsport, Pa., part of which is now leased to Aviation Mfg. Corp.

Financial Reports Received

EASTERN AIR LINES INC. 9 months net profit was \$456,840 (\$1.08) after provision for Federal income tax estimated at \$160,000, comparing with \$137,588 (33c) in 1938 9 months. "The year 1939 is the first in which a profit was realized in each of the 1st 9 months," line states. Third quarter net income was \$93,424, (22c) after \$203,280 depreciation, amortization, etc., and \$37,000 for Federal income tax, comparing with loss of \$10,175 in 1938 period. Total current assets on Sept. 30 were \$2,524,125, comparing with \$1,777,291 Dec. 31, 1938. Equipment purchases in 9 months totaled \$745,000, including 5 Douglas.

Nine months figures, for 1939 and 1938 respectively, follow: Mail revenues \$1,286,750 (\$1,114,369); passenger revenues \$3,981,983 (\$2,855,845); express revenues \$148,818 (\$10,151); other revenue (net) \$46,799 (\$16,551). Total revenues \$5,467,351 (\$4,126,971). Net profit before provisions of \$160,000 and \$39,000 Federal income taxes, respectively, \$616,840 (\$176,588).

Revenue miles flown 2,975,369 (6,167,277); air express pounds carried 665,134 (524,547); revenue passenger miles flown 73,081,557 (51,766,364); revenue passengers 163,769 (116,497); mail pounds carried 2,894,620 (2,319,768); mail pound miles 1,547,967,000 (1,210,417,000).

THOMPSON PRODUCTS INC. reports consolidated net income for 9 months of \$938,673 (\$3.02 a common share), comparing with \$277,618 (83c) in 1938 9 months. Third quarter net income was \$292,618, subject to adjustments, after charges, equal after dividends paid on \$5 preferred stock to 89c each on 293,290 no-par shares of common, comparing with \$165,454 (53c) in 1938 3rd quarter and \$320,900 (\$1.06) for June 1939 period.

AVIATION CORP. net loss (consolidated) for 9 months ended Aug. 31 was \$1,324,047 after charges. Backlog was \$7,250,000 on Oct. 18, comparing with \$1,620,000 on May 31. The three subsidiaries, Vultee Aircraft, Stinson Aircraft and Lycoming, are working on basic trainers. Stinson observation planes, and engines, respectively, for the Army Air Corps.

EX-CELL-O CORP. 9 months (ending Sept. 30) net profit was \$530,514 (\$1.34 a share) comparing with \$301,693 (76c) in 1938 9 months. Third quarter net profit was \$193,685 after charges (49c a share on 394,750 \$1 par shares).

comparing with \$143,443 (36c) for 1938 3rd quarter and \$187,057 (47c) for June quarter.

FAIRCHILD AVIATION CORP. net income for 9 months ended Sept. 30, subject to adjustments, \$295,512 after charges and taxes (87c each on 337,032 shares), comparing with \$255,402 (76c) in 1938 9 months. Backlog Sept. 30 was \$1,988,361, comparing with \$1,731,424 a year previous.

WRIGHT AERONAUTICAL CORP. 9 months (ending Sept. 30) net profit was \$2,878,580 (\$4.80 a share), comparing with \$2,490,983 or \$4.15 a share in 1938 9 months. Net profit for 3rd quarter was \$547,544 after depreciation, etc. (91c each on 599,857 no par shares), comparing with \$822,740 (\$1.37) in 1938 quarter.

CURTISS-WRIGHT CORP. and subsidiaries report net income for 9 months ended Sept. 30 of \$4,543,552 (equal after class A). A dividend requirement of 39c a share (on common) comparing with \$2,625,898 (12c on common) in 1938 9 months. Third quarter net profit was \$1,172,748 after depreciation, Federal income tax, etc., or 8c a share on 7,429,118 shares of \$1-par common stock after allowing dividends on 1,158,464 shares of \$2 non-cumulative Class A stock. Net income in 1938 3rd quarter was \$444,036 or 38c a share of Class A stock.

NATIONAL AVIATION CORP., as of Sept. 30, reports indicated net assets were equal to \$16.48 per share of capital stock, after providing for estimated Federal income taxes of \$425,435, comparing with net assets of June 30 equal to \$14.61 a share and with net assets on Sept. 30, 1938, equal to \$12.92. Net income for 9 months ended Sept. 30 was \$300,598, including \$311,827 profit on sales of securities and after expenses. Federal income taxes, etc., comparing with net loss of \$294,583 in 1938 9 months, including \$310,867 net loss on sales of securities. Outstanding capital stock (\$5 par) totals 477,274 shares. Total assets Sept. 30, including \$621,286 cash, were \$6,730,145, comparing with \$563,935 and \$6,332,015 respectively, on Sept. 30, 1938. Paid-in surplus figure was 4,139,368 and earned surplus was \$181,279.

BENDIX AVIATION CORP. in 9 months showed net income of \$3,987,083 after charges (\$1.47 each on 2,097,663 shares of capital stock) comparing with net loss of \$406,205 in 1938 9-months period. For 3rd quarter, net profit was \$918,873 (44c), comparing with \$1,144,214 (54c) in 2nd quarter, and \$89,794 (4c) in 1938 3rd period. Net profit in 12 months ending Sept. 30 was \$3,649,336 (\$1.74), comparing with net loss of \$62,240 in preceding 12 months.

AMERICAN AIRLINES INC. net income for 9 months ended Sept. 30 was \$942,283 after charges, comparing with \$48,690 in 1938 9 months. Operating revenues for period (with 1938 9 months figures in parentheses) follow: Passengers \$7,452,209 (\$5,233,194); mail \$2,704,373 (\$2,482,394); express \$309,778 (\$231,088); other \$170,735 (\$165,111); totals \$10,637,097 (\$8,112,789). Expenses \$1,935,591 (\$1,323,376). Net profit before provisions of \$204,500 and \$9,600 Federal income tax, respectively, \$1,168,783 (\$58,290).

Revenue miles flown were 13,587,132 (11,242,028); revenue passengers 376,506 (249,396); revenue passenger miles 144,316,413 (98,893,841).

TRANSCONTINENTAL & WESTERN AIR INC. reports net loss for 9 months ended Sept. 30 of \$212,393, comparing with loss of \$751,719 for 1938 9 months. Third quarter net income was \$143,474, representing gain of \$134,500 over earnings of 2nd quarter. Income figures for 1939 and 1938 3rd quarters, respectively, follow: Passenger revenues \$1,602,020 (\$1,054,560); express \$62,625 (\$44,110); mail \$625,150 (\$504,215); other revenues \$27,805 (\$35,383); total revenues \$2,317,600 (\$1,738,268). Operating expenses \$1,916,784 (\$1,484,163). Depreciation \$251,430 (\$254,080). Net operating income \$49,386 (\$25). Other income and charges \$5,912 (\$80,693).

Revenue miles flown were 3,419,540 (2,607,504); revenue passengers 48,713 (31,060); revenue passenger miles 30,631,973 (19,994,717).

Dividends and Bonuses

UNITED AIRCRAFT CORP. \$1.25 a share, payable Dec. 15 to holders of Dec. 1.

DOUGLAS AIRCRAFT CO. INC. \$3.00 a share, payable Nov. 20 to holders of Nov. 10.

THOMPSON PRODUCTS INC. 6% of employees' gross earnings in recent four weeks period, mailed to 1,292 hourly rate workers employed at Cleveland plant for one year or more.

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